

*DRAFT Rhode Island Wildlife Action Plan Habitat Profiles*  
**Species of Greatest Conservation Need**

**Aquatic Invertebrates**

**ANTHOZOA**

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***Distribution & Abundance***

***Threats and Actions by Species***

**burrowing anemone (*Actinothoe modesta*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**triangle floater (*Alasmidonta undulata*)**

**Distribution & Abundance:** *Alasmidonta undulata* is fairly widespread but somewhat localized and has been documented at about 20 sites in 14 Rhode Island cities and towns. This species is usually found in clean rivers, especially in sand or gravel substrate of riffles and runs below dams. It is usually uncommon at any given site but there is a large population in a stretch of the Pawtuxet River below Natick Dam (West Warwick).

*Status: IUCN Rank: LC, SRANK: SNR, GRANK: G4, RSGCN: H-H, Mussels: 1, CODES: RES, Res/B: 1, GRP: 1, PRIOR: 1,*

*- Climate Change Vulnerability: Low=2100 (Temperature change)*

**Threat 1 - Household sewage and urban waste water; Road runoff**

- Actions:*
- *Site/area management*
  - *protect habitat from chemical runoff, work with RI DOT*
  - *Alliance and partnership development*
  - *development of conservation partnerships will be necessary to protect or improve habitat*

**Threat 2 - Agricultural and forestry effluents; Pollution from farming**

- Actions:*
- *Site/area management*
  - *work with farmers to protect streams*

**Threat 3 - Dams and water management/use; Water withdrawal**

- Actions:*
- *Resource and habitat protection*
  - *protect natural hydrology*
  - *Habitat and natural process restoration*

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- *restore natural hydrology especially groundwater seepage, look for opportunities to modify culverts, work with RI DOT*

**modest alderia (*Alderia modesta*)**

Status:

- Climate Change Vulnerability: Unknown

**clam worm (*Alitta virens*)**

Status:

- Climate Change Vulnerability: Unknown

**tube dwelling amphipod (*Ampelisca spp.*)**

Status:

- Climate Change Vulnerability: Unknown

**sand burrower (*Amphiporeia virginiana*)**

Status:

- Climate Change Vulnerability: Unknown

**alewife floater (*Anodonta implicata*)**

Distribution & Abundance: *Anodonta implicata* is found in about 9 Rhode Island cities and towns that contain coastal rivers and ponds where the host fish, river herring, also occur. The largest population of *A. implicata* occurs in the Pawcatuck River as far upstream as the village of Carolina (Richmond) and northward to Mechanic Street Dam (Hopkinton/Richmond) in the Wood River. Other populations occur at the Saugatucket River (South Kingstown), Potowomut River at Forge Road (Warwick), and Gorton Pond (Warwick). *A. implicata* also occurs in Brickyard Pond (Barrington) and Nonquit Pond (Tiverton). Some rivers that have herring runs apparently lack this species. Although this species is probably not as at risk as several other species of Rhode Island mussels, and may even be increasing, it is a species that would benefit from river herring restoration projects.

Status: IUCN Rank: LC, SRANK: SNR, GRANK: G5. RSGCN: H-H, Mussels: 1, CODES: RES, Res/B: 1, GRP: 3, PRIOR: 1,

- Climate Change Vulnerability: High=2030 (Temperature change)

**Threat 1 - Dams and water management/use; Restriction and reduction of river herring**

- Actions:
- *Habitat and natural process restoration*
  - *expand anadromous fish passage*
  - *Alliance and partnership development*
  - *development of conservation partnerships will be necessary to protect or improve habitat*

**Threat 2 - Household sewage and urban waste water; Road runoff**

- Actions:
- *Site/area management*
  - *protect habitat from chemical runoff, work with RI DOT*

**Threat 3 - Invasive non-native/alien species; Zebra mussels**

- Actions:
- *Awareness and communications*
  - *need to educate the public about species loss due to zebra mussels*

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**ocean (black) quahog (*Arctica islandica*)**

Status:

- Climate Change Vulnerability: Unknown

- Site/area management

**bay scallop (*Argopecten irradians*)**

Distribution & Abundance: Bay scallops live in bays and estuaries from New England to the Gulf of Mexico. They are most abundant in nearshore estuarine and marine waters (salinity: 25 to 32 ppt). Juvenile (larval post-settlement) stages are associated with complex bottom structures (eelgrass, rock, cobble bottoms). Adult stages are found in soft sediments and submerged aquatic vegetation (eelgrass). Highest abundance recorded in Quonochontaug and Point Judith Ponds.

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution; deteriorating water quality**

- Actions:
- Land/water management
  - enhance habitats
  - Species management
  - brood stock enhancement

**common sea star (*Asterias forbesi*)**

Status:

- Climate Change Vulnerability: Unknown

**northern star coral (*Astrangia poculata*)**

Status: CITES: II, IUCN Rank: LC,

- Climate Change Vulnerability: Unknown

**Atlantic mud piddock (*Barnea truncata*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**channeled whelk (*Busycon canaliculatus*)**

Distribution & Abundance: Channeled and knobbed whelks are endemic to the eastern coast of the United States, from Cape Cod, Massachusetts to northern Florida. Both channeled and knobbed whelks prefer sandy, shallow, intertidal and subtidal waters, and can be common in soft sediment habitats. They are nocturnal and are known to eat clams and polychaetes. An active predator of whelks is the blue crab (*Callinectes sapidus*). Commonly found in nearshore soft sediments (sand, mud) of mid and upper Narragansett Bay, especially in the East Passage and into Mount Hope Bay. Knobbed whelk isn't as common as the channeled whelk in nearshore waters. Drastic declines in the lobster industry, has resulted in increased fishing pressure on whelks. Channeled whelk, which was once only caught as a by-catch in lobster traps, is now a directed fishery that produces over 1.0 million pounds per year in Rhode Island. Landings from the East Passage of Narragansett Bay account for more than 90% of state trap landings for channeled whelk. Currently, there is extremely limited information about the age structure, growth rate, and size at maturity, and population variation within these areas. Now

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that an increased number of fishermen rely on this resource as a significant portion of their income, it is vital that this information be gathered. Life history strategies need to be understood to produce a viable stock assessment that will allow for meaningful management to the fishery within each of these areas.

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Threat 1 - Fishing and harvesting aquatic resources; Potential over-exploitation. Limited or few management controls.**

- Actions:
- Law and policy
  - Policies and regulations
  - Compliance and enforcement

**Threat 2 - Biological resource use; By-catch and indirect fishing threats.**

- Actions:
- Species management
  - Development of minimum size regulations, possession limits, and catch reduction standards.
  - Species recovery
  - Limit or control by-catch or direct fisheries.
  - Compliance and enforcement

### **knobbed whelk (*Busycon carica*)**

Distribution & Abundance: See channeled whelk " "

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

- Promulgation of new management regulations under statutory authorities (Title 20).

### **blue crab (*Callinectes sapidus*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

### **jonah crab (*Cancer borealis*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Threat 1 - Fishing and harvesting aquatic resources; Potential over-exploitation, no size or catch regulations, no baseline data**

- Actions:
- Species management
  - No baseline data

### **rock crab (*Cancer irroaiatus*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

### **American tube dwelling anemone (*Ceriantheopsis americana*)**

Status:

- Climate Change Vulnerability: Unknown

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**parchment worm (*Chaetopterus variopedatus*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**bamboo worm (*Clymenella torquata*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**sevenspine bay shrimp (*Crangon septemspinosa*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**Eastern oyster (*Crassostrea virginica*)**

*Status: SRANK: SNR, GRANK: G5.*

- *Climate Change Vulnerability: Unknown*

**Threat 1 - Problematic native species; Temperature warming has made MSX and dermo diseases more prevalent**

- Actions:*
- *Species recovery*
  - *introduce disease resistant strains of oyster*

**Threat 2 - Fishing and harvesting aquatic resources; More restrictive management controls based upon observed population**

- Actions:*
- *Habitat and natural process restoration*
  - *habitat manipulation and improvement*

**striped nudibranch (*Cratena pilata*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**tube worm (*Diopatra cuprea*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**coral worm (*Dodecaceria corallii*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

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**common sand dollar (*Echinarachnius parma*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**burrowing anemone (*Edwardsia elegans*)**

Status:

- Climate Change Vulnerability: Unknown

**nudibranch (*Elysia catulus*)**

Status:

- Climate Change Vulnerability: Unknown

**Eastern emerald elysia (*Elysia chlorotica*)**

Status:

- Climate Change Vulnerability: Unknown

**razor clam (Atlantic jackknife) (*Ensis directus*)**

Status:

- Climate Change Vulnerability: Unknown

**Threat 1 - Fishing and harvesting aquatic resources; Unregulated species**

- Actions:
- Species management
  - need baseline data
  - Policies and regulations
  - implement minimum size and possession limits

**Threat 2 - Pollution; Eutrophication**

- Actions:
- Land/water management
  - reduction in nitrogen

**dwarf balloon aeolis (*Eubranchus exigus*)**

Status:

- Climate Change Vulnerability: Unknown

**painted ballon worm (*Eubranchus pallidus*)**

Status:

- Climate Change Vulnerability: Unknown

**flatback mud crab (*Eurypanopeus depressus*)**

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Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**amphipod (*Gammarus faciatius*)**

Status:

- Climate Change Vulnerability: Unknown

**amphipod (*Gammarus lawrencianus*)**

Status:

- Climate Change Vulnerability: Unknown

**amphipod (*Gammarus tigrinus*)**

Status:

- Climate Change Vulnerability: Unknown

**ribbed mussel (*Geukensia demissa*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**blood worm (*Glycera dibranchiata*)**

Status:

- Climate Change Vulnerability: Unknown

**digging amphipod (*Haustorius canadensis*)**

Status:

- Climate Change Vulnerability: Unknown

**American lobster (*Homarus americanus*)**

**Distribution & Abundance:** The American lobster (*Homarus americanus*) is distributed along the Atlantic coast of North America, from Labrador in the north to Cape Hatteras, North Carolina in the south. South of New Jersey, the American lobster is uncommon, and landings in mid-Atlantic make up less than 0.1% of all commercial landings. This species thrives in cold, shallow waters where rocks and artificial reefs provide refuge from predators. It typically lives at water depths of 4 to 50-m. The lobster fishery in southern New England is a multimillion dollar industry. The fishery for American lobster was one of the most valuable in the state of Rhode Island. During peak years, the fishery landed 8.2 million pounds of product worth 31.6 million dollars in ex-vessel landings. The inshore lobster fishery suffered a major decline from 1999 to 2004, partly as a result of a major oil spill in Block Island Sound in 1996 that killed 9 million juvenile lobsters destined to recruit to the commercial fishery. It is estimated that 20 to 50% of lobsters are migratory suggesting a pattern of seasonal migration from inshore shoals during the summer and fall to offshore continental shelf in the winter and spring. During the day, lobsters dwell in burrows under rocks and in the mud. They forage at night, actively preying on

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crabs, worms, bivalves, and other benthic animals. Inshore – highest densities/rates of occurrence found in the East Passage, Narragansett Bay Offshore – highest densities/ rates of occurrence found south-east of Block Island The American lobster is susceptible to several pathogens including Gaffkemia (or red tail), and epizootic shell disease caused by the bacterium *Vibrio fluvialis*. Both pathogens have been shown to cause lethargy, shell lesions, and death. In Long Island Sound, lobsters have been diagnosed with excretory calcinosis which causes mineralized calculi to form in the antennal glands and gills resulting in asphyxiation and death. Increased disease intensity and prevalence has been attributed to increase duration of warmer water temperatures.

Status: IUCN Rank: LC, SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Threat 1 - Fishing and harvesting aquatic resources; Over-exploited fishery**

- Actions:
- Compliance and enforcement
  - Greater management of fisheries
  - Private sector standards and codes
  - Co-management and private sector incentives to reduce exploitation
  - Livelihood, economic and other incentives
  - Licence or vessel acquisition

**Threat 2 - Problematic native species; Striped bass predation**

- Actions:
- Ex situ conservation
  - Population and juvenile habitat enhancement
  - Education and awareness
  - V-notching program
  - Compliance and enforcement

**Threat 3 - Climate change and severe weather; Population at southern-most extent. Increased shell disease and immunological stress.**

- Actions:
- Law and policy
  - More restrictive fisheries management measures/regulations
  - Education and awareness

**amphipod (*Hyale plumulosa*)**

Status:

- Climate Change Vulnerability: Unknown

**Northern lacuna (*Lacuna vincta*)**

Status:

- Climate Change Vulnerability: Unknown

**Morton's eggcockle (*Laevicardium murtoni*)**

Status:

- Climate Change Vulnerability: Unknown

**lampmussel (*Lampsilis radiata*)**

Distribution & Abundance: *Lampsilis radiata* occurs primarily in natural lakes and connecting rivers, but is uncommon at about ten localities statewide within eight cities and towns. The bulk of the population occurs within the Pawtuxet River and Pawcatuck River Basins. Within the Pawcatuck River Basin *L. radiata* only occurs within the natural lakes and connecting rivers between Hundred Acre Pond and Worden's Pond (South

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Kingstown). This species tends to co-occur with many other localized aquatic organisms, including *Ligumia nasuta* and is a useful umbrella species to assess the quality of such habitats.

Status: STSTAT: C, SRANK: S1, GRANK: G5. RSGCN: H-M, Mussels: 1, CODES: RES, Res/B: 1, GRP: 4, PRIOR: 1,  
- Climate Change Vulnerability: Low=2100 (Temperature change)

**Threat 1 - Household sewage and urban waste water; Road runoff**

- Actions:
- Site/area management
  - protect habitat from chemical runoff, work with RI DOT
  - Alliance and partnership development
  - development of conservation partnerships will be necessary to protect or improve habitat

**Threat 2 - Agricultural and forestry effluents; Pollution from farming**

- Actions:
- Site/area management
  - work with farmers to protect streams

**Threat 3 - Dams and water management/use; Water withdrawal**

- Actions:
- Resource and habitat protection
  - protect natural hydrology
  - Habitat and natural process restoration
  - restore natural hydrology especially groundwater seepage, look for opportunities to modify culverts, work with RI DOT

**longnose spider crab (*Libinia dubia*)**

Status:

- Climate Change Vulnerability: Unknown

**portly spider crab (*Libinia emarginata*)**

Status:

- Climate Change Vulnerability: Unknown

**Eastern pond mussel (*Ligumia nasuta*)**

Distribution & Abundance: *Ligumia nasuta* occurs in natural lakes and associated rivers, and its limited distribution in Rhode Island is probably a function of post-glacial processes. *Ligumia* formerly occurred at Cunliff's Pond (Providence) and Warwick Pond (Warwick), but those two sites no longer contain it. *L. nasuta* is presently known to occur only within the Pawcatuck River Basin and is moderately common only in Worden's Pond and at Chapman Pond (Westerly), where the presence of small individuals indicated recruitment. Other sites apparently contain only a few individuals. *Ligumia* is therefore one of the most localized and uncommon of Rhode Island's mussels.

Status: IUCN Rank: NT, STSTAT: C, SRANK: S1, GRANK: G4G5. RSGCN: H-VH, Mussels: 1, CODES: RES, Res/B: 1, GRP: 6, PRIOR: 1,  
- Climate Change Vulnerability: Low=2100 (Temperature change)

**Threat 1 - Household sewage and urban waste water; Road runoff**

- Actions:
- Site/area management
  - protect habitat from chemical runoff, work with RI DOT
  - Alliance and partnership development
  - development of conservation partnerships will be necessary to protect or improve habitat

**Threat 2 - Agricultural and forestry effluents; Pollution from farming**

- Actions:
- Site/area management
  - work with farmers to protect streams

**Threat 3 - Dams and water management/use; Water withdrawal**

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- Actions:
- *Resource and habitat protection*
  - *protect natural hydrology*
  - *Habitat and natural process restoration*
  - *restore natural hydrology especially groundwater seepage, look for opportunities to modify culverts, work with RI DOT*

### **Atlantic horseshoe crab (*Limulus polyphemus*)**

**Distribution & Abundance:** The horseshoe crab (*Limulus polyphemus*) is an arthropod more closely related to spiders than other crabs and has a body form that evolved more than 200 million years ago. They are found from Nova Scotia to Mexico and live year-round in Rhode Island waters. They are harvested as bait for other fisheries, but are not typically eaten for meat. Population numbers are being greatly reduced due to extensive use as eel bait and for blood research. They come on shore to spawn in May and June, with spawning tending to peak at night around the new and full moons. Since horseshoe crabs rely on beaches and the shallow intertidal environment to produce their young, their abundance is an indicator for the health and productivity of this transitional environment. Horseshoe crab eggs are an essential food source for migrating shorebirds, and their larvae are consumed by many fish. They are most valuable to humans for their blood proteins which are extremely sensitive to bacteria. The extracted compound, known as LAL, is used to screen injected drugs and implanted biomedical devices for contamination.

*Status: IUCN Rank: NT, SRANK: SNR, GRANK: G5. NALCC: X (B),*  
*- Climate Change Vulnerability: Unknown*

#### **Threat 1 - Fishing and harvesting aquatic resources; Over-exploitation as bait fishery**

- Species management*
- Site/area management*
- *Resource and habitat protection*

### **longfin inshore squid (*Loligo pealeii*)**

**Distribution & Abundance:** Harvested for bait since the late 1800s, long-fin squid are now harvested for their mild, sweet meat and support an important fishery on the East Coast. The majority of the world's catch of long-fin squid comes from the waters of the northwest Atlantic Ocean, and U.S. fisheries supply the majority of long-fin squid in both domestic and foreign markets. Long-fin squid are sensitive to changing environmental conditions, especially in terms of growth and development. For example, longfin squid hatched in the summer grow faster than those hatched in the winter, which can cause great fluctuations in their abundance from year to year. Long-fin squid also grow fast and have a short natural life span—they reproduce right before they die, at 6 to 8 months old. Even without fishing, the entire population replaces itself every 6 months or so. As a result, longfin squid can handle relatively high fishing pressure. However, it's important to keep harvests at a level that leave enough squid to spawn because successful reproduction and survival are necessary to ensure the future abundance of the resource and sustainable operation of the fishery. In addition, protecting areas where their eggs are deposited (areas with rocks or aquatic vegetation) is also important to maintain the sustainability of squid populations.

*Status:*  
*- Climate Change Vulnerability: Unknown*

#### **Threat 1 - Fishing and harvesting aquatic resources; Monitoring the quota compliance**

### **Eastern pearlshell (*Margaritifera margaritifera*)**

**Distribution & Abundance:** *Margaritifera margaritifera* is a cold-water species whose host fish is the brook trout. However, *Margaritifera* is much more restricted in distribution than the widespread brook trout. *Margaritifera* occurs in seven Rhode Island cities and towns but is found primarily in headwater streams of the Pawcatuck River Basin, especially in the Wood River Sub-basin and there is scant documentation of its presence elsewhere in Rhode Island. This species tends to be the only mussel present when it is encountered, but it is extremely localized and there are only about three sizable populations left in the state. There is also a demonstrable

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history of decline and loss at certain Rhode Island sites, attributable to trampling, collection, contamination, and perhaps beaver activity. *Margaritifera* is an indicator of exceptional cold-water streams and river that also support many other rare species, including dragonflies.

*Status: IUCN Rank: EN, STSTAT: C, SRANK: S2, GRANK: G4. RSGCN: L-H, Mussels: 1, CODES: RES, Res/B: 1, GRP: 7, PRIOR: 1,*  
*- Climate Change Vulnerability: High=2030 (Temperature change)*

**Threat 1 - Residential and commercial development; Nearby development negatively changes the character of the streams**

*Site/area protection*

- *protect the natural hydrology and the associated watershed*
- *Resource and habitat protection*
- *restore the adjacent upland habitat, maintain the brook trout population*
- *Alliance and partnership development*
- *development of conservation partnerships will be necessary to protect or improve habitat*

**Threat 2 - Household sewage and urban waste water; Siltation, road salt, scarification of the streambed**

- Actions:*
- *Site/area management*
  - *protect habitat from chemical runoff, work with RI DOT*

**Threat 3 - Recreational activities; Stepped on by fishermen**

- Actions:*
- *Awareness and communications*
  - *need to educate the public about species loss due to trampling*

**red gilled worm (*Marphysa belli*)**

*Status:*

*- Climate Change Vulnerability: Unknown*

**marsh snail (*Melampus bidentatus*)**

*Status: SRANK: SNR, GRANK: G5.*

*- Climate Change Vulnerability: Unknown*

**bay quahog (*Mercenaria mercenaria*)**

Distribution & Abundance: Abundant in nearshore estuarine and marine waters (salinity: 20 to 32 ppt). Although quahogs can be found along the North American Atlantic coast from Canada's Gulf of Saint Lawrence to Florida, they are particularly abundant between Cape Cod and New Jersey. Farther north, most waters are too cold for quahogs, restricting them to just a few relatively warm coves; while to the south, quahogs have more predators, such as blue crabs. Today, the quahog is by far the most economically important resource harvested from Narragansett Bay. At the turn of the century, though, oysters dominated commercial shellfishing in the bay. But the oyster population gradually declined after the 1920s, and at the same time the quahog fishery expanded. Hard clams are most abundant on shell-containing soft bottoms. They are also found on sand flats, sand/mud flats, and on muddy bottoms (in decreasing order of abundance). Hydrodynamic baffling from shell and gravel substrate may trap passing larvae of hard clams resulting in higher abundances. Also, the reduction in currents near the benthos enhances deposition of fine sediments and suspended food materials. Therefore, hydrodynamic baffling from shell and gravel substrate may provide increased food sources and enhanced productivity of hard clams. Quahog Parasite Unknown (QPX) is a parasite that affects *M. mercenaria*. While little is known about the disease, research is currently under way in several laboratories, including University of Rhode Island and Roger Williams University. This research is fueled by the need to inform aquaculturists and shellfishermen who suffer financially because of the mortality rates in clams that QPX inflicts and the ensuing years in which runs must be left fallow to clear the disease.

*Status: SRANK: SNR, GRANK: G5.*

*- Climate Change Vulnerability: Unknown*

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**Threat 1 - Fishing and harvesting aquatic resources; Localized depletion**

- Actions:
- *Species management*
  - *area specific management controls*
  - *Compliance and enforcement*
  - *Policies and regulations*

**Northern horse mussel (*Modiolus modiolus*)**

Status:

- Climate Change Vulnerability: Unknown

**soft-shell clam (*Mya arenaria*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Threat 1 - Fishing and harvesting aquatic resources; Over-exploitation, no baseline data**

- Actions:
- *Compliance and enforcement*
  - *Not enforced and poorly managed*
  - *Species management*
  - *Limit licences and lower possession limits*

**Threat 2 - Climate change and severe weather; Changes in precipitation and reduced salinity**

- Actions:
- *Law and policy*
  - *More restrictive management*
  - *Awareness and communications*

**blue mussel (*Mytilus edulis*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution**

**Threat 2 - Climate change and severe weather; Increased warming and acidification**

**Threat 3 - Invasive non-native/alien species; Byssal thread disease**

Actions:

**American marsh hopper (*Ochestia grillus*)**

Status:

- Climate Change Vulnerability: Unknown

**short spined brittle star (*Ophioderma brevispinum*)**

Status:

- Climate Change Vulnerability: Unknown

**lady crab (*Ovalipes ocellatus*)**

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*Status:*

- *Climate Change Vulnerability: Unknown*

**mouse ear marsh snail (*Ovatella myosotis*)**

*Status: SRANK: SNR, GRANK: GNR.*

- *Climate Change Vulnerability: Unknown*

**Atlantic mud crab (*Panopeus herbstii*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**cone worm (*Pectinaria gouldii*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**false angelwing (*Petricolaria pholadiformis*)**

*Status: SRANK: SNR, GRANK: GNR.*

- *Climate Change Vulnerability: Unknown*

**sea scallop (*Placopecten magellanicus*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**Harris mud crab (*Rhithropanopeus harrisi*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**hairy sea cucumber (*Sclerodactyla briareus*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

**purple marsh crab (*Sesarma reticulatum*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

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**parchment tube worm (*Spiochaetopterus costarum oculatus*)**

Status:

- Climate Change Vulnerability: Unknown

**Atlantic surf clam (*Spisula solida*)**

Status:

- Climate Change Vulnerability: Unknown

**mantis shrimp (*Squilla empusa*)**

Status:

- Climate Change Vulnerability: Unknown

**green sea urchin (*Strongylocentrotus droebachiensis*)**

Status:

- Climate Change Vulnerability: Unknown

**squawfoot (*Strophitus undulatus*)**

Distribution & Abundance: *Strophitus undulatus* has only been found at a few localities within five Rhode Island cities and towns. *S. undulatus* occurs primarily in higher quality riffle areas of the Moosup and Wood-Pawcatuck River basins. *S. undulatus* is usually found sparingly among robust populations of more common species; i.e., a quality river assemblage might also contain a few *S. undulatus*. The best populations occurred in the Queens River (Pawcatuck River Basin), the Moosup River (Quinebaug River Basin), and the South Branch River (Pawtuxet River Basin).

Status: STSTAT: C, SRANK: S1, GRANK: G5. Mussels: 1, CODES: RES, Res/B: 1, GRP: 8, PRIOR: 1,

- Climate Change Vulnerability: Low=2100 (Temperature change)

**Threat 1 - Household sewage and urban waste water; Road runoff**

- Actions:
- Site/area management
  - protect habitat from chemical runoff, work with RI DOT
  - Alliance and partnership development
  - development of conservation partnerships will be necessary to protect or improve habitat

**Threat 2 - Agricultural and forestry effluents; Pollution from farming**

- Actions:
- Site/area management
  - work with farmers to protect streams

**Threat 3 - Dams and water management/use; Water withdrawal**

- Actions:
- Resource and habitat protection
  - protect natural hydrology
  - Habitat and natural process restoration
  - restore natural hydrology especially groundwater seepage, look for opportunities to modify culverts, work with RI DOT

**golden ambersnail (*Succinea wilsoni*)**

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**Species of Greatest Conservation Need**

Status:

- Climate Change Vulnerability: Unknown

**nudibranch (*Tergipes tergipes*)**

Status:

- Climate Change Vulnerability: Unknown

**red-jointed fiddler crab (*Uca minax*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Atlantic sand fiddler crab (*Uca pugilator*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**Atlantic marsh fiddler crab (*Uca pugnax*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**banded marsh hopper (*Uholorchestia uhleri*)**

Status:

- Climate Change Vulnerability: Unknown

**coastal mud shrimp (*Upogebia affinis*)**





Status:

- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

## Beetles of Deciduous Forests

## INSECTA

|   |   | <u>Common Name</u>           | <u>Scientific Name</u>       |
|---|---|------------------------------|------------------------------|
|  |  | A Ground Beetle              | <i>Bembidion semicinctum</i> |
|  |  | A Ground Beetle              | <i>Calathus ingratus</i>     |
|  |  | Caterpillar Hunter           | <i>Calosoma wilcoxi</i>      |
|   |   | Serrate-shoulder Slug Hunter | <i>Carabus serratus</i>      |
|   |   | Sylvan Worm and Slug Hunter  | <i>Carabus sylvosus</i>      |
|   |   | Round Worm and Slug Hunter   | <i>Carabus vinctus</i>       |
|   |   | Goldsmith Beetle             | <i>Cotalpa lanigera</i>      |

### Distribution & Abundance

The distribution and status of certain beetles (Coleoptera) associated with deciduous forests are not well understood in Rhode Island and the listing of species identified as SGCN is primarily based on status assessments conducted elsewhere within their respective known distributions. Most of the beetles identified in this group are associated with mature forests. For example, *Carabus sylvosus* has been termed a “forest specialist” that was found in only old growth stands in a Wisconsin study, and *Bembidion semicinctum* and *Calathrus ingratus* are believed to primarily occur in mature stands of northern hardwoods. The caterpillar hunter, *Calosoma wilcoxi*, is a forest generalist that climbs trees to actively hunt caterpillars and may have importance in control of forest caterpillar outbreaks. It is suspected that populations of these species are vulnerable to decline due to the reduction of mature forests, especially the northern hardwood type, in Rhode Island but more inventory and research is needed to accurately assess the status of these species.

### Threats and Actions by Species

#### ground beetle (*Bembidion semicinctum*)

Status: SRANK: SNR, GRANK: GNR. GRP: 6, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

##### Threat 1 - Lack of information

Actions: • Data collection and analysis; Conduct research to determine distribution and status in Rhode Island

#### ground beetle (*Calathus ingratus*)

Status: SRANK: SNR, GRANK: GNR. GRP: 8, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

#### caterpillar hunter (*Calosoma wilcoxi*)

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**Species of Greatest Conservation Need**

Status: SRANK: SNR, GRANK: GNR. GRP: 9, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**serrate shoulder slug hunter (*Carabus serratus*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 12, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**sylvan worm & slug hunter (*Carabus sylvosus*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 13, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**round worm & slug hunter (*Carabus vinctus*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 14, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**goldsmith beetle (*Cotalpa lanigera*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 31, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

**Beetles of Maritime Beach Strands**

**INSECTA**



Common Name

Scientific Name

Flea Beetle

*Phyllotreta chalybeipennis*

Hister Beetle

*Spilodiscus arcuatus*

***Distribution & Abundance***

***Threats and Actions by Species***

**flea beetle (*Phyllotreta chalybeipennis*)**

**Distribution & Abundance:** The flea beetle (*Phyllotreta chalybeipennis*) is a small beetle that feeds on sea rocket (*Cakile edentula*), a characteristic plant of the maritime beach strand community. In Rhode Island, this species was easily found on Block Island during surveys in the 1990's (Sikes 2002), but it was not found on any mainland populations of sea rocket. Instead, an introduced species (*Phyllotreta cruciferae*) has been found on mainland populations. In New England, the only other record for *P. chalybeipennis* is for Nantucket circa 1930.

Apparently not collected since before the 1950's, the Hister Beetle (*Spilodiscus arcuatus*) was collected on Block Island in 1994 and is in need of further study from a conservation perspective. There are specimen records from mainland RI from Providence (1907), Warwick (1900) and Kingston, and also Watch Hill (1909). It is apparently restricted to sandy riparian or coastal beach and dune habitats, and is included in this habitat grouping based on its discovery under a piece of driftwood in the beach strand community. Although apparently mostly subterranean, this beetle may form associations with burrowing rodents and perhaps nesting birds as well as utilize carrion and rotting vegetation. *S. arcuatus* has been documented as once occurring along the Atlantic coast from Nova Scotia to Virginia, with a few records from lakeshore dunes in Indiana, Illinois and Iowa, but is thought to have disappeared from most of its former range. Sikes (2002) postulated the species may now only be found on Block Island and is an ideal choice for more focused study.

Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 39, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Invasive non-native/alien species; Unkown impacts due to competition from introduced *P. cruciferae***

Actions: • Data collection and analysis; Conduct research

**hister beetle (*Spilodiscus arcuatus*)**

**Distribution & Abundance:** See INV163 *Phyllotreta chalybeipennis*

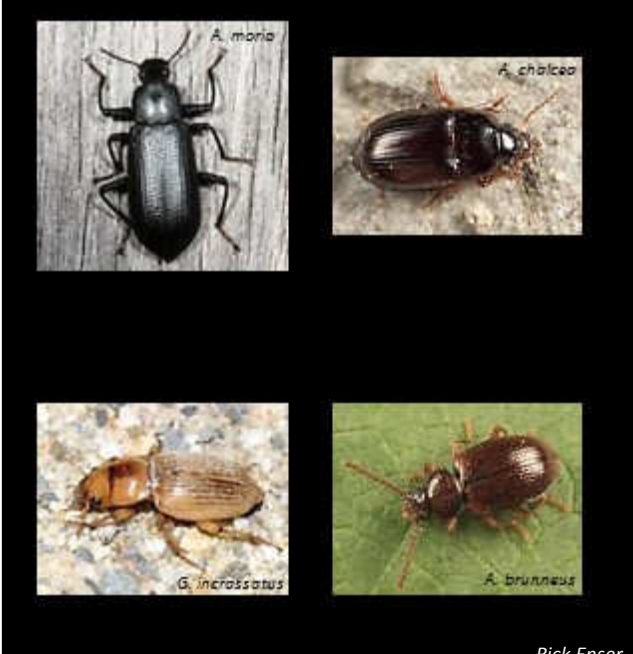
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*Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 36, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

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**Species of Greatest Conservation Need**

**Beetles of Pitch Pine Barrens/Inland Sand Barrens**

**INSECTA**



| <u>Common Name</u>        | <u>Scientific Name</u>      |
|---------------------------|-----------------------------|
| False Mealworm            | <i>Alobates morio</i>       |
| Seed-eating Ground Beetle | <i>Amara chalcona</i>       |
| Lagriid Beetle            | <i>Anaedes brunneus</i>     |
| Ground Beetle             | <i>Geopinus incrassatus</i> |

*Rick Enser*

***Distribution & Abundance***

The distribution and status of certain beetles (Coleoptera) associated with pitch pine barrens and inland sand barrens are not well understood in Rhode Island and the listing of species identified as SGCN is primarily based on status assessments conducted elsewhere within their respective known distributions. The ground beetle *Geopinus incrassatus* has been identified as an index species of sandy regions, and the other three species are indicative of sparsely vegetated, sandy and gravelly habitats, or associated with the trunks of downed pine trees. It is suspected that populations of these species are vulnerable to decline due to the reduction of pitch pine habitats in Rhode Island.

***Threats and Actions by Species***

**false mealworm beetle (*Alobates morio*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 2, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

**Threat 1 - Lack of information**

Actions: • Data collection and analysis; Conduct research to determine distribution and status in Rhode Island

**seed-eating ground beetle (*Amara chalcona*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 3, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

**lagriid beetle (*Anaedes brunneus*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 4, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

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**ground beetle (*Geopinus incrassatus*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 35, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

**Beetles of Salt Marshes**

**INSECTA**



***Distribution & Abundance***

The ground beetle *Bembidion confusum* is not reported historically from Rhode Island but was discovered on Block Island and is rare enough in New England to be of potential conservation concern (Sikes 2002). Elsewhere in its range, this species is reported to occur on bare clay- and sand-mixed soils on the margins of lakes and rivers, but is included in this profile based on its occurrence along the wet margin of brackish tide pools and marshes on the backside of West Beach, Block Island, where it is apparently abundant. Adults feed on dead and dying arthropods that are washed up on shore. The most recent southern New England mainland record for this beetle is from Connecticut, but that record is more than 50 years old. Ranging from the Gulf Coast of Florida to Maine, the margined tiger beetle (*Cicindela marginata*) is apparently secure but may face an uncertain future due to the predicted rise in sea level. *Cicindela marginata* is another coastal species and is presently known from about ten sites in Rhode Island. *C. marginata* favors pebbly mud flats and occurs only within Narragansett Bay and Block Island. This species tends to occur in relatively low numbers and is often found near outwash fans and flats near tidal creeks. Such sites often feature sparse growth of maritime plants such as sea lavender and salicornia. Because of regulations intended to protect such coastal features and because many sites are in inaccessible areas, this species is probably not presently at risk from habitat loss or trampling. However, future sea level rise is problematic for *C. marginata* populations here and elsewhere.

***Threats and Actions by Species***

**ground beetle (*Bembidion confusum*)**

Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 5, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

## Dung Beetles

## INSECTA



| <u>Common Name</u> | <u>Scientific Name</u>       |
|--------------------|------------------------------|
| Tumblebug          | <i>Canthon pilularius</i>    |
| Tumblebug          | <i>Canthon vigilans</i>      |
| Dung beetle        | <i>Copris fricator</i>       |
| Dung beetle        | <i>Dichotomius carolinus</i> |

### ***Distribution & Abundance***

Dung beetles (Scarabaeidae) are an important group of insects associated with the decomposition of animal manure. They consume large amounts of dung as adults and larvae, and have been credited in reducing pasture fouling and improving soil quality through aeration and adding nutrients. In Rhode Island, several species of dung beetles are recognized as SGCN. *Copris fricator* and *Dichotomius carolinus* are large dung beetles, the second being the largest dung beetle in New England at 1 1/4 inches. *Copris* is easily captured and surprisingly was not found on the mainland of Rhode Island during five years of sampling in the early 2000's, apparently the last mainland specimen was collected in Elmwood in 1913. The second species is not easily captured and has also not been seen on the mainland of RI since 1914 in East Providence. Both species have been recorded on Block Island in recent years (Sikes, D. 2002.). Two additional SGCN dung beetles, *Canthon pilularius* and *C. vigilans*, also known as tumblebugs, are dung rolling beetles based on their habit of breaking manure piles into small brood balls that are rolled to a suitable site and buried. The current distribution of these two species on the mainland of Rhode Island is not known; viable populations are present on Block Island. Declines in dung beetle populations have been attributed to the use of a variety of pesticides for the management of parasites (horn flies and face flies) of cattle. Various chemicals used to control these pests, including ivermectin, imidacloprid, and pyrethroids, have been shown to be toxic to dung beetles, and current research is focused on identifying fly control strategies that have minimal impact on dung beetle populations.

### ***Threats and Actions by Species***

#### **tumblebugs (*Canthon pilularius*)**

Status: SRANK: SNR, GRANK: GNR. EXT: 1, GRP: 10, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

#### **Threat 1 - Agriculture and forestry effluents; Pesticides used for control of parasites**

Actions: • Data collection and analysis; Research into alternative pesticides

#### **tumblebugs (*Canthon vigilans*)**

Status: SRANK: SNR, GRANK: GNR. EXT: 1, GRP: 11, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

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**dung beetle (*Copris fricator*)**

Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 30, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**dung beetle (*Dichotomius carolinus*)**

Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 34, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

- Research an appropriate wormer or education about organic farming practices

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**Species of Greatest Conservation Need**

**Tiger Beetles**

**INSECTA**

**Description**

Fourteen species of tiger Beetles (Coleoptera: Cicindelidae) have been documented in Rhode Island, all of which are in the genus *Cicindela*. Adult tiger beetles are active diurnal predators that tend to occupy open habitats such as sandy flats and ledges. Larvae are also predatory but occupy tunnels in the soil. Many species of tiger beetles are vulnerable to extinction and there is a long history of loss and decline in Rhode Island and elsewhere in New England. Of the 14 species, two (*Cicindela patruela* and *C. dorsalis dorsalis*) are extirpated. Only three or four species (*C. sexguttata*, *repanda*, *scutellaris*, and *punctulata*) could be considered secure. The remaining species are either very localized in limited habitat areas or have suffered long-term declines in this area. Tiger beetles depend on disturbed habitats but these might be characterized by long-cycle disturbance. That is, openings of bare soil or sand must be produced and maintained, but excessive or chronic disturbance such as uncontrolled vehicle use or other forms of trampling kill the larvae and render the habitat useless. Two conservation priorities (including the extirpated species *C. patruela*) are confined to inland sand dunes and barrens habitats. These habitats tend to occur where soils are deep and sandy, especially in the glacial deposits within Washington and Kent Counties. The open sandy flats were formerly created by fires or other scarification processes, but are now severely at risk because of ongoing fire suppression and concomitant revegetation. Inland sand dunes are also favored by ORV users and many sites are at risk or have already been lost though illegal vehicle use. Another cluster of conservation priorities occurs in the coastal zone. *Cicindela d. dorsalis* is presently listed by the FWS as a threatened species, but has not been seen in Rhode Island since the 1960's. Barrier beaches face many of the same threats as inland sand communities, except that coastal beaches are much more common and have associated endangered species such as Piping Plovers, which ensures that they get more conservation attention. Nevertheless, whereas Piping Plovers leave the beaches and migrate for the winter, tiger beetles spend their entire lives in that habitat, and so are vulnerable from vehicular use at all seasons. Rising ocean level will eventually overwhelm many sites.

**Species**

- Northeast beach tiger beetle (*Cicindela dorsalis dorsalis*)
- big sand tiger beetle (*Cicindela formosa generosa*)
- hairy-necked tiger beetle (*Cicindela hirticollis rhodensis*)
- common claybank tiger beetle (*Cicindela limbalis*)
- marginated tiger beetle (*Cicindela marginata*)
- cow path tiger beetle (*Cicindela purpurea purpurea*)
- Eastern red-bellied tiger beetle (*Cicindela rufiventris rufiventris*)
- oblique-lined tiger beetle (*Cicindela tranquebarica tranquebarica*)
- festive tiger beetle (*Cicindela scutellaris rugifrons*)

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**Species of Greatest Conservation Need**

**Northeast beach tiger beetle**

*Cicindela dorsalis dorsalis*

**INSECTA**  
Tiger Beetles



***Distribution & Abundance***

***Status***

- Climate Change Vulnerability: Unknown

***Threats and Actions***

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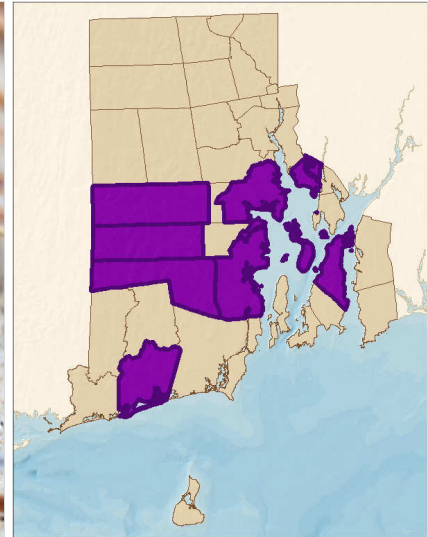
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**Species of Greatest Conservation Need**

## big sand tiger beetle

*Cicindela formosa generosa*

### INSECTA

Tiger Beetles



### **Distribution & Abundance**

*Cicindela formosa generosa* occurs exclusively in inland sand flats and barrens. Although this species has been known from about 10 recent sites in Rhode Island, some populations have disappeared or are extremely threatened. Except for one large population in the Big River Management Area, sites tend to contain only a few individuals. Most of the recent localities for this species occur on state managed lands and other preserves. However, many of these sites have been degraded or lost because of trampling by illegal ORV usage or revegetation of the habitat. There are very few places where this species could be considered secure. One is the Nockum Hill area of Barrington, where the habitat is maintained for the benefit of nesting turtles and vehicular traffic is prohibited. A TNC preserve in North Kingstown has an intact inland sand flat that is not often visited by vehicles or pedestrians.

- Habitat Community: Inland Sand Barren

### **Status**

STSTAT: C, SRANK: S1, GRANK: G5T5. Res/B: 1, FORM: 1, GRP: 17, PRIOR: 1,

- Climate Change Vulnerability: Low=2100

### **Threats and Actions**

**Threat 1 - Natural system modifications; Succession of sand patches, anything that fills sand patch (grass, trees, asphalt)**

- Actions:
- Site/area management
  - Manage for sand patches

**Threat 2 - Residential and commercial development; Development of sand patches**

- Actions:
- Land/water protection
  - Protect sand patches

**Threat 3 - Recreational activities; Impacts from human disturbance of habitats**

- Actions:
- Land/water protection
  - Protect habitats

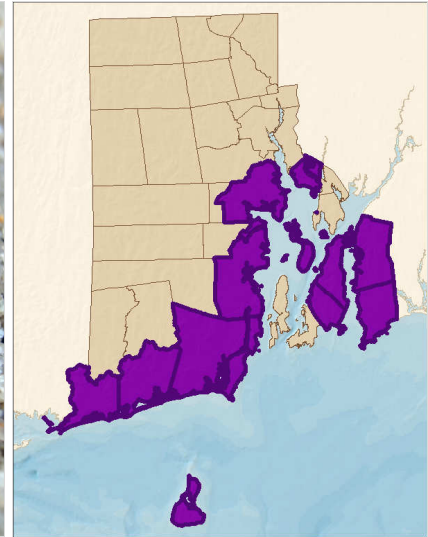
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**Species of Greatest Conservation Need**

## hairy-necked tiger beetle

*Cicindela hirticollis rhodensis*

**INSECTA**

Tiger Beetles



### ***Distribution & Abundance***

*Cicindela hirticollis rhodensis* is one of two extant species that occur exclusively in coastal habitats. *C. hirticollis* requires sandy beaches without much disturbance. There is a long history of loss of this species from beaches, especially those in upper Narragansett Bay and Aquidneck Island. This species is found now primarily along the outer beaches of the south coast, including Block Island. It is vulnerable especially to vehicular use of beaches but even foot trampling can degrade the habitat if it is chronic and extensive enough. The largest *C. hirticollis* populations presently occur in the Napatree/Sandy Point area of Westerly, the Truston/Cards Pond complex, and at Briggs and Quicksand Ponds, Little Compton. This species has been lost or severely reduced from many miles of outer beach where vehicle use is rampant.

- Habitat Community: Coastal Grassland, Type: Maritime Beach Strand

### ***Status***

STSTAT: C, SRANK: S4, GRANK: G5. Res/B: 1, GRP: 18, PRIOR: 1,

- Climate Change Vulnerability: High=2030

### ***Threats and Actions***

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#### **Threat 1 - Human intrusions and disturbance; Disturbance from recreation**

- Actions:
- *Land/water protection*
  - *Protect habitats*

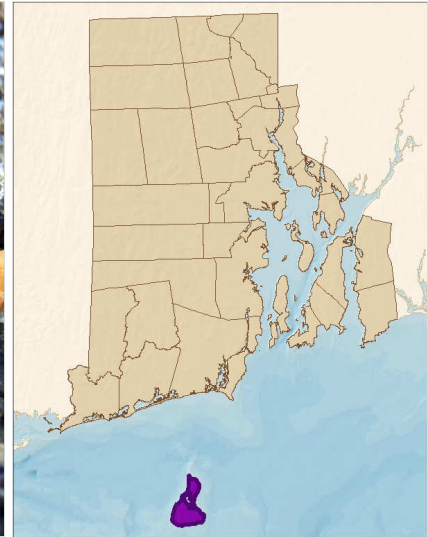
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**Species of Greatest Conservation Need**

**common claybank tiger beetle**

*Cicindela limbalis*

**INSECTA**

Tiger Beetles



***Distribution & Abundance***

*Cicindela limbalis* occupies a very specialized habitat, exposed clay banks, and is presently is known from only a few sites in New England. In Rhode Island it is found only on Block Island, where it occurs in moderate numbers along the southern bluffs and elsewhere. The habitat is essentially not threatened, as long as Block Island exists, but there may be some collection pressure on the population because this species is uncommon regionally.

- Habitat Community: Sparsely Vegetated Rock, Type: Maritime Bluff

***Status***

STSTAT: C, SRANK: S1, GRANK: G5. Res/B: 1, GRP: 19, PRIOR: 1,

- Climate Change Vulnerability: Medium=2050

***Threats and Actions***

**Threat 1 - Recreational activities; Impacts from human disturbance of estuarine bluff clay habitats**

- Actions:
- *Land/water protection*
  - *Protect estuarine bluff clay habitats*

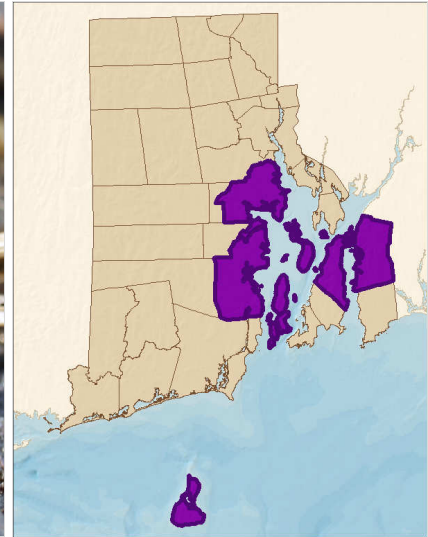
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**Species of Greatest Conservation Need**

**margined tiger beetle**

*Cicindela marginata*

**INSECTA**

Tiger Beetles



***Distribution & Abundance***

*Cicindela marginata* is another coastal species and is presently known from about 10 sites in Rhode Island. *C. marginata* favors pebbly mud flats and occurs only within Narragansett Bay and Block Island. This species tends to occur in relatively low numbers and is often found near outwash fans and flats near tidal creeks. Such sites often feature sparse growth of maritime plants such as Sea Lavender and Salicornia. Because of regulations intended to protect such coastal features and because many sites are in inaccessible areas, this species is probably not presently at risk from habitat loss or trampling. However, future sea level rise is problematic for *C. marginata* populations here and elsewhere.

- Habitat Community: Salt Marsh

***Status***

STSTAT: C, SRANK: S1, GRANK: G5. CODES: RES, Res/B: 1, GRP: 20, PRIOR: 1,

- Climate Change Vulnerability: High=2030

***Threats and Actions***

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**Threat 1 - Climate change and severe weather; Salt marsh species**

Actions: • *Other climate change actions*

**Threat 2 - Invasive non-native/alien species; Phrag**

Actions: • *Invasive/problematic species control*

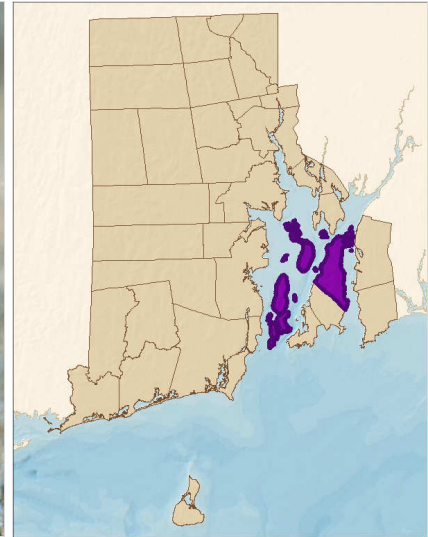
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**Species of Greatest Conservation Need**

**cow path tiger beetle**

*Cicindela purpurea purpurea*

**INSECTA**

Tiger Beetles



***Distribution & Abundance***

*Cicindela purpurea* has undergone one of the most dramatic declines of any species in New England. Formerly widespread in Rhode Island and adjacent areas, this species has disappeared from large areas of its former range for reasons that are not completely understood. The physical habitat does not seem particularly unusual; dry or moist soil with scattered stones, but this species has nonetheless undergone a severe range retraction, with population loss first noted on mainland sites and a pattern of increasing localization on large marine islands and Cape Cod. This species is extremely uncommon in Rhode Island and confined to two sites, both of which reside within preserve areas on large marine islands. Neither trampling nor over collection seem to be affecting populations at this time. However, active habitat management, including the reintroduction of fire, must occur to retain populations, and expansion of management efforts around core populations is desirable.

- Habitat Community: Inland Sand Barren

***Status***

STSTAT: C, SRANK: S1, GRANK: G5. Res/B: 1, GRP: 23, PRIOR: 1,

- Climate Change Vulnerability: Low=2100

***Threats and Actions***

---

**Threat 1 - Human intrusions and disturbance; Disturbance of inland dune cobble and sands, and cow paths**

- Actions:
- *Land/water protection*
  - *Protect habitats*

**Threat 2 - Natural system modifications; Succession**

- Actions:
- *Site/area management*
  - *Manage for habitat*
  - *Habitat and natural process restoration*
  - *prescribed burns to keep vegetation down*

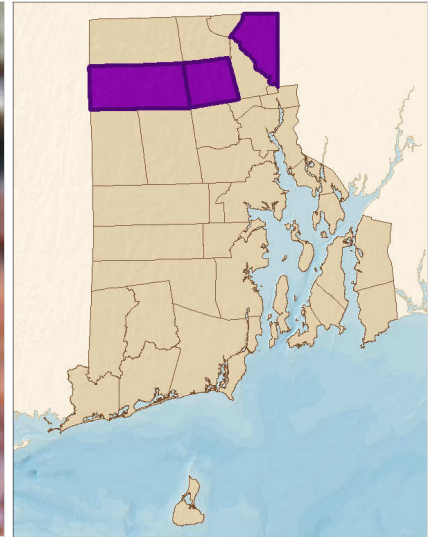
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**Species of Greatest Conservation Need**

## Eastern red-bellied tiger beetle

*Cicindela rufiventris rufiventris*

**INSECTA**

Tiger Beetles



### ***Distribution & Abundance***

This species is extremely localized and is known to occupy only a few exposed granitic ledges within northeastern Rhode Island, primarily within the town of Cumberland. Most of the known habitat lies within existing conservation lands, including Diamond Hill State park, but populations are quite small. Trampling of the habitat is not a problem at present. The biggest threat to these sites is probably forest regeneration, which could eventually overtop and shade the ledges where they reside.

- Habitat Community: Sparsely Vegetated Rock, Type: Inland Rocky Outcrop

### ***Status***

STSTAT: C, SRANK: S1, GRANK: G5. Res/B: 1, FORM: 1, GRP: 25, PRIOR: 1,

- Climate Change Vulnerability: Low=2100

### ***Threats and Actions***

#### **Threat 1 - Human intrusions and disturbance; Disturbance of rock outcrop**

- Actions:
- *Land/water protection*
  - *Protect habitats*

#### **Threat 2 - Natural system modifications; Succession**

- Actions:
- *Site/area management*
  - *Manage for habitat*

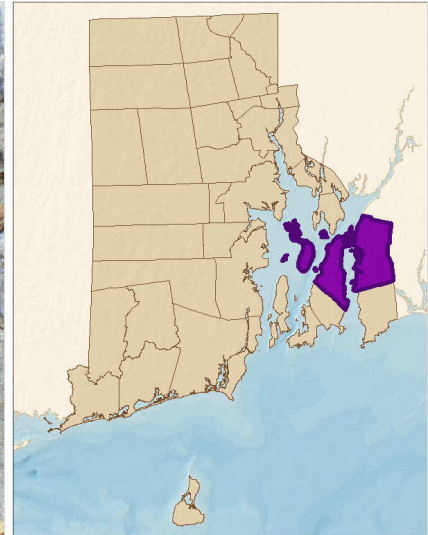
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**Species of Greatest Conservation Need**

**oblique-lined tiger beetle**

*Cicindela tranquebarica tranquebarica*

**INSECTA**

Tiger Beetles



***Distribution & Abundance***

*Cicindela tranquebarica* mirrors the status of *C. purpurea* except that it is still extant at a few mainland sites in southern New England. In Rhode Island, remaining populations are known only from Prudence Island and Tiverton, where the species resides on protected managed lands. As with *Cicindela purpurea*, trampling and over-collection do not seem to be affecting populations at this time. However, active habitat management, including the reintroduction of fire, must occur to retain populations.

- Habitat Community: Pitch Pine Woodland/Barrens

***Status***

SRANK: S1, GRANK: G5. Res/B: 1, GRP: 28, PRIOR: 1,

- Climate Change Vulnerability: Low=2100

***Threats and Actions***

---

**Threat 1 - Human intrusions and disturbance; Disturbance from recreation**

- Actions:
- *Land/water protection*
  - *Protect habitats*

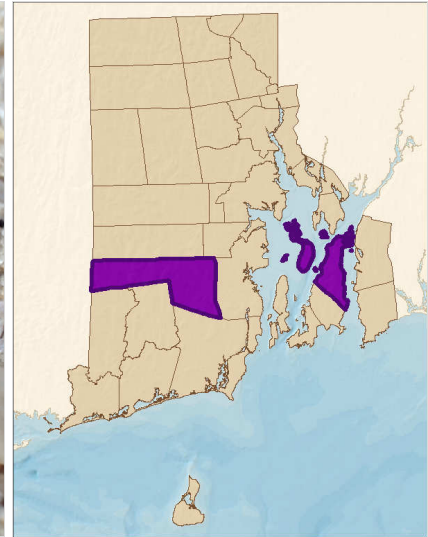
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**festive tiger beetle**

*Cicindela scutellaris rugifrons*

**INSECTA**

Tiger Beetles



***Distribution & Abundance***

Although the nominate subspecies *scutellaris* is not locally threatened and can be found widely in habitats such as abandoned gravel pits, the green form, *rugifrons*, occurs only in a few inland sand flat habitats and has disappeared from others because of habitat succession. There are presently two locations where this taxon occurs, both of which are on conservation lands. Management is occurring in these areas but ORV traffic is still a threat to populations.

- Habitat Community: Inland Sand Barren

***Status***

SRANK: S5, GRANK: G5.

- Climate Change Vulnerability: Low=2100

***Threats and Actions***

**Threat 1 - Natural system modifications; Succession of sand patches, anything that fills sand patch (grass, trees, asphalt)**

- Actions:
- *Site/area management*
  - *Manage for sand patches*

**Threat 2 - Residential and commercial development; Development of sand patches**

- Actions:
- *Land/water protection*
  - *Protect sand patches*
  - *Habitat and natural process restoration*
  - *prescribed burns to keep vegetation down*

**Threat 3 - Recreational activities; Impacts from human disturbance of habitats**

- Actions:
- *Land/water protection*
  - *Protect habitats*

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**Carrion Beetles**

**INSECTA**



***Distribution & Abundance***

The carrion beetles (silphids) make up a relatively small group, with about 12 Rhode Island species. These beetles seek out dead animals on which to feed and rear their young. The American burying beetle (*Nicrophorus americanus* Olivier) disappeared from a large part of its former range and was listed by the U.S. Fish and Wildlife Service as a Threatened Species in 1989 (Federal Register Vol. 54, No. 133). Additional survey work has discovered additional locations in the western portion of its range, but the species still has a relatively limited distribution in Rhode Island, Oklahoma, Arkansas, Kansas, Nebraska, and South Dakota. Reintroduction of this species to Nantucket (Massachusetts) is ongoing.

***Threats and Actions by Species***

**American burying beetle (*Nicrophorus americanus*)**

Status: IUCN Rank: CR, FED: FWS, STSTAT: SE, SRANK: S1, GRANK: G2G3. Res/B: 1, GRP: 37, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Problematic native species; Too many scavenger**

Actions: • Invasive/problematic species control

**Threat 2 - Other; Reduction in special food availability**

Actions: • Species management

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**Other Beetles**

**INSECTA**



| <u>Common Name</u>       | <u>Scientific Name</u>       |
|--------------------------|------------------------------|
| ground beetle            | <i>Agonum darlingtoni</i>    |
| bambardier beetle        | <i>Brachinus cyanipennis</i> |
| predaceous diving beetle | <i>Cybister fimbriolatus</i> |
| elderberry borer         | <i>Desmocerus palliatus</i>  |
| ground beetle            | <i>Omophron tessellatum</i>  |
| Eastern snail eater      | <i>Scaphinotus elevatus</i>  |

***Distribution & Abundance***

***Threats and Actions by Species***

**ground beetle (*Agonum darlingtoni*)**

**Distribution & Abundance:** Apparently known historically from Rhode Island this species was reported to have been collected circa 1970 but no other information is available. This ground beetle is reported to be a peatland specialist and is primarily known from boreal bogs and fens in northern New England. More research is needed to determine the current distribution and status of this species in Rhode Island.

*Status: OTSTAT: CT-C (KD), SRANK: SNR, GRANK: GNR. GRP: 1, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

**Threat 1 - Lack of information**

**Actions:** • *Data collection and analysis; Conduct research to determine distribution and status in Rhode Island*

**bambardier beetle (*Brachinus cyanipennis*)**

**Distribution & Abundance:** The bombardier beetle (*Brachinus cyanipennis*) is a species of ground beetle (Carabidae) that is generally found along the banks of rivers and brooks, lake shores, floodplain forests, and borders of maershes. In a study conducted in older floodplain forests in a study in Dutchess and Columbia Counties, New York this beetle was primarily found in older floodplain forests. This species is listed as Special Concern in Connecticut where it is thought to be possibly extirpated.

*Status: SRANK: SNR, GRANK: GNR. GRP: 7, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

**9-spotted lady beetle/ladybug (*Coccinella novemnotata*)**

**Distribution & Abundance:** In 1989, the State of New York designated the nine-spotted lady beetle (*Coccinella*

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novemnotata) as the state insect as it was then believed to be one of the most common and important lady beetles in agricultural areas in New York and the Northeast; however, today it seems to be extirpated from many states and occupies only a tiny fraction of its former range across the United States and southern Canada. Recent surveys have found none in the Northeast. Although the decline of this insect has been recent, little is known about why it vanished. Part of the reason may be the introduction of non-native lady beetles which may have brought disease, eaten prey used by the none-spotted, or even eaten the nine-spot itself, but the exact reason remains a mystery. Conservation efforts for the nine-spotted lady beetle are focused on increased inventory and monitoring in order to locate remaining populations. Currently, Cornell University runs a citizen science program, "The Lost Ladybug Project", that encourages citizens to search for and report any findings of nine-spotted lady beetle. Although this beetle has been recorded from Rhode Island no current populations are known.

Status: SRANK: SNR, GRANK: G2. EXT: 1, GRP: 29, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Lack of information; Possibly competing with invasive ladybug Hippademia convergens**

- Actions:
- Data collection and analysis; Research fish and wildlife populations; Research possible competition with invasive ladybug Hippademia convergens
  - Species recovery, captive breeding, reintroduction

**predaceous diving beetle (*Cybister fimbriolatus*)**

Distribution & Abundance: Although widely distributed throughout North America (se. Canada to Florida, west to Oregon and across the south to southern California as well as throughout Mexico) the predaceous diving beetle (*Cybister fimbriolatus*) is unreported from the mainland of any New England state; however, in 1998 this species was found in two ponds on Block Island (Sikes 2002). It is one of the largest beetles in northeastern North America (30-33 mm in length) and is described as a voracious predator of tadpoles, small fish, snails, and other aquatic organisms.

Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 32, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**elderberry borer (*Desmocerus palliatus*)**

Distribution & Abundance: The elderberry borer (*Desmocerus palliatus*) is found throughout the eastern US, west to Kansas, Oklahoma, and Louisiana, and north to Ontario. It occurs in shrub swamps and edges of streams where the host plant (*Sambucus*) occurs. Eggs are laid near the base of elderberry stems and the larvae burrow into stems and then tunnel down to feed on living roots. Considered to be uncommon throughout its range, more information is needed to determine the current distribution and status of the elderberry borer in Rhode Island.

Status: SRANK: SNR, GRANK: GNR. GRP: 33, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Lack of information**

- Actions:
- Data collection and analysis; Conduct research to determine distribution and status in Rhode Island

**ground beetle (*Omophron tessellatum*)**

Distribution & Abundance: The round sand beetle (*Omophron tessellatum*) is reported to be a wide-ranging species throughout the US and Canada but is listed as a species of special concern in Connecticut because it is thought to be extirpated from that state. Sikes (2002) reports that this species has not been reported from mainland Rhode Island, but was discovered on Block Island at Sachem Pond in 1995. The round sand beetle is nocturnally predaceous and gregarious, burrowing in damp sands nears water bodies. More information is needed to understand the ecology of this species in order to determine threats and actions for conservation.

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*Status: SRANK: SNR, GRANK: GNR. Res/B: 1, GRP: 38, PRIOR: 1,*

*- Climate Change Vulnerability: Unknown*

*Data collection and analysis; Conduct research to determine distribution and status in Rhode Island.*

**Eastern snail eater (*Scaphinotus elevatus*)**

Distribution & Abundance: The Eastern snail eater (*Scaphinotus elevatus*) is a ground beetle that, as its common name implies, is predaceous on snails and slugs. The current distribution and status of this species in Rhode Island is not well understood. In the Midwest this species is reported to inhabit wet prairies, and it is likely in the Northeast the E. snail eater will be found in similar habitats including wet hayfields, pastures, and meadows.

*Status: SRANK: SNR, GRANK: GNR. GRP: 40, PRIOR: 1,*

*- Climate Change Vulnerability: Unknown*

*Data collection and analysis; Conduct research to determine distribution and status in Rhode Island*

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**Species of Greatest Conservation Need**

**Lepidoptera of Atlantic White Cedar Swamps**

**INSECTA**



| <u>Common Name</u>  | <u>Scientific Name</u>          |
|---------------------|---------------------------------|
| Hessel's Hairstreak | <i>Callophrys hesseli</i>       |
| Thaxter's Pinion    | <i>Lithophane thaxteri</i>      |
| Pale Green Pinion   | <i>Lithophane viridipallens</i> |

***Distribution & Abundance***

***Threats and Actions by Species***

**Hessel's hairstreak (*Callophrys hesseli*)**

Distribution & Abundance: Hessel's hairstreak occurs as disjunct populations along the Atlantic coastal plain from southern Maine to South Carolina, Georgia, and on the Gulf Coast of the Florida panhandle in swamps wherever Atlantic white cedar grows, the sole food plant for the larvae of this small butterfly. In southern New Jersey, Hessel's hairstreak appears to be fairly abundant, but outside of this area it is rare. As an obligate feeder on Atlantic White Cedar, Hessel's hairstreak is an indicator species for this habitat and is currently found in 10-12 of Rhode Island's best cedar swamps. Hessel's hairstreak is listed on the Xerces Society Red List of Pollinator Insects; listed as an Endangered Species in Connecticut, Maine, New York, and Delaware; and, as a Species of Concern in Massachusetts and Rhode Island. The pale green and Thaxter's pinion moths do not necessarily rely on larval food plants that are specific to Atlantic white cedar swamps; however, the occurrence of these species in Rhode Island have consistently been documented from this habitat type. Butterflies and moths are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insects, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

Status: STSTAT: C, SRANK: S2S3, GRANK: G3G4. GRP: 6, PRIOR: 1, Xerces: imperiled,  
 - Climate Change Vulnerability: Unknown

**Threat 1 - Hunting and collecting terrestrial animals; Pesticide application from mosquito pesticide spraying**

- Actions:
- Policies and regulations
  - Limit spraying. And work with DEM to have them make sure permittees are aware of rare species in the habitat when they are spraying (applies also to mosquito sprayers)
  - Other
  - Survey/monitor

**Threat 2 - Natural system modifications; Limited habitat**

- Actions:
- Resource and habitat protection

**Threat 3 - Dams and water management/use; Water manipulation affects their habtiat- white cedar bogs and swamps are gloabally rare.**

- Actions:
- Land/water protection

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- *Limit water withdrawals on multiple levels (private, community, utility, municipality)*

**Thaxter's pinon moth (*Lithophane thaxteri*)**

Status: SRANK: SU, GRANK: G4. GRP: 22, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

*Data collection and analysis; Research into alternative specific pesticides*

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

*Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms*

**pale green pinion moth (*Lithophane viridipallens*)**

Status: STSTAT: C, SRANK: S2S3, GRANK: G4. GRP: 23, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Habitat Loss due to development (see column Q and notes)**

**Threat 2 - Dams and water management/use; Habitat loss due to water withdrawals(see column Q and notes)**

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**Species of Greatest Conservation Need**

## Lepidoptera of Deciduous Forests

## INSECTA



| <u>Common Name</u> | <u>Scientific Name</u>       |
|--------------------|------------------------------|
| <u>Butterflies</u> |                              |
| Henry's Elfin      | <i>Callophrys henrici</i>    |
| Hickory Hairstreak | <i>Satyrium caryaevorum</i>  |
| <u>Moths</u>       |                              |
| Fragile Dagger     | <i>Acronicta fragilis</i>    |
| Charming Underwing | <i>Catocala blandula</i>     |
| Angus' Datana      | <i>Datana angustii</i>       |
| Black-dotted Ruddy | <i>Ilexia intractata</i>     |
| Holly Sallow       | <i>Metaxaglaea violacea</i>  |
| Hanham's Owlet     | <i>Phalaenostola hanhami</i> |
| Purple Plagodis    | <i>Plagodis kuetzingi</i>    |
| A Noctuid Moth     | <i>Psaphida thaxterianus</i> |

### ***Distribution & Abundance***

Butterflies and moths of deciduous forested habitats are primarily limited by the availability of larval food plants found in these habitats. In particular are several species dependant on American Holly (*Ilex opaca*), an uncommon understory shrub and small tree of oak forests in southern Rhode Island. Butterflies and moths are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insets, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

### ***Threats and Actions by Species***

#### **fragile dagger moth (*Acronicta fragilis*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

Actions: • Data collection and analysis; Research into alternative specific pesticides

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

Actions: • Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

#### **Henry's elfin (*Callophrys henrici*)**

Status: STSTAT: C, SRANK: S1S2, GRANK: G5. GRP: 5, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 3 - Logging and wood harvesting; Conversion of forest to grasslands**

Actions: • Land/water protection  
 • Conservation and acquisition of forests.

#### **charming underwing (*Catocala blandula*)**

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Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**Angus's datana (*Datana angusii*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**black-dotted ruddy moth (*Ilexia intractata*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 36, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**holly sallow (*Metaxaglaea violacea*)**

Status: SRANK: S2S4, GRANK: G5. GRP: 27, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents**

**Hanham's owlet (*Phalaenostola hanhami*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

**purple plagodis moth (*Plagodis kuetzingi*)**

Status: SRANK: SNR, GRANK: G5. GRP: 32, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**noctuid moth (*Psaphida thaxterianus*)**

Status: SRANK: SNR, GRANK: G4. GRP: 33, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**hickory hairstreak (*Satyrium caryaevorum*)**



Status: STSTAT: C, SRANK: S1, GRANK: G4. GRP: 23, PRIOR: 1,

- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

**Lepidoptera of Dwarf Shrub Bog/Fen**

**INSECTA**

|   |   | <u>Common Name</u>         | <u>Scientific Name</u>            |
|---|---|----------------------------|-----------------------------------|
|   |   | <u>Butterflies</u>         |                                   |
|  |  | Bog Copper Butterfly       | <i>Lycaena epixanthe</i>          |
|   |   | <u>Moths</u>               |                                   |
|   |   | Sharp-lined Powder         | <i>Eufidonia discospilata</i>     |
|   |   | Pitcher Plant              | <i>Exyra fax</i>                  |
|   |   | Bog Tiger                  | <i>Grammia speciosa</i>           |
|   |   | Venus Flytrap Cutworm      | <i>Hemipachnobia subporphyrea</i> |
|   |   | Tufted Sedge               | <i>Hypocoena inquinata</i>        |
|   |   | American Brindle           | <i>Lithomoia germana</i>          |
|   |   | Coastal Swamp Metarranthis | <i>Metarranthis pilosaria</i>     |
|   |   | Bog Oligia                 | <i>Oligia minuscula</i>           |
|   |   | Pitcher Plant Borer        | <i>Papaipema appassionata</i>     |
|   |   | Chalky Wave                | <i>Scopula purata</i>             |
|   |   | Sulphur Angle              | <i>Speranza sulphurea</i>         |

**Distribution & Abundance**

Butterflies and moths of open peatlands are identified with this community based on the larval food preferences of plants found in these habitats. In particular, the Pitcher Plant Borer, Pitcher Plant Moth, and Venus flytrap Cutworm are dependant on insectivorous plants (Pitcher Plant and Sundew) that are exclusively found in Dwarf Shrub Bogs and Fens. As well, larvae of the Bog Copper Butterfly feed solely on Wild Cranberry, a signature plant of sphagnum bogs. In general, butterflies and moths of bogs and fens are primarily limited by the availability of these habitats. In Rhode Island, sphagnum bogs and fens are typically small in size (>5 acres) and widely distributed so that most of the GCN species are limited in number and size of populations. Butterflies and moths are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insets, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

**Threats and Actions by Species**

**sharp-lined powder moth (*Eufidonia discospilata*)**

Status: SRANK: S3, GRANK: G5.

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

Actions: • Data collection and analysis; Research into alternative specific pesticides

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

Actions: • Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**pitcher plant moth (*Exyra fax*)**

Status: SRANK: SNR, GRANK: G4. GRP: 14, PRIOR: 1,

- Climate Change Vulnerability: Unknown

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**bog tiger moth (*Grammia speciosa*)**

Status: STSTAT: C, SRANK: S1, GRANK: G4G5. GRP: 17, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**venus flytrap cutworm (*Hemipachnobia subporphyrea*)**

Status: SRANK: SNR, GRANK: G1.  
- Climate Change Vulnerability: Unknown

**tufted sedge moth (*Hypocoena inquinata*)**

Status: SRANK: SNR, GRANK: GNR.  
- Climate Change Vulnerability: Unknown

**American brindle moth (*Lithomoia germana*)**

Status: SRANK: SNR, GRANK: G5.  
- Climate Change Vulnerability: Unknown

**bog copper (*Lycaena epixanthe*)**

Status: STSTAT: C, SRANK: S3, GRANK: G4G5. GRP: 17, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**coastal swamp metarranthis (*Metarranthis pilosaria*)**

Status: STSTAT: C, SRANK: S1S3, GRANK: G3G4. GRP: 26, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**bog oligia (*Oligia minuscula*)**

Status: SRANK: SNR, GRANK: G4. GRP: 29, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**pitcher plant borer (*Papaipema appassionata*)**

Status: STSTAT: C, SRANK: S1, GRANK: G4. GRP: 31, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**chalky wave moth (*Scopula purata*)**

Status: SRANK: SNR, GRANK: G4. GRP: 34, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**sulphur angle moth (*Speranza sulphurea*)**

*Status: SRANK: SNR, GRANK: G4.*

*- Climate Change Vulnerability: Unknown*

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**Species of Greatest Conservation Need**

**Lepidoptera of Open Freshwater Wetlands  
(Emergent Marshes, Shrub Swamps, and Wet  
Meadows)**

**INSECTA**



| <u>Common Name</u>         | <u>Scientific Name</u>      |
|----------------------------|-----------------------------|
| <u>Butterflies</u>         |                             |
| Meadow Fritillary          | <i>Boloria bellona</i>      |
| Silver-bordered Fritillary | <i>Boloria selene</i>       |
| Black Dash                 | <i>Euphyes conspicua</i>    |
| Bronze Copper              | <i>Lycaena hyllus</i>       |
| Acadian Hairstreak         | <i>Satyrium acadicum</i>    |
| <u>Moths</u>               |                             |
| Twin-dotted Macrochilo     | <i>Apamea inebriata</i>     |
| Curved Halter              | <i>Capis curvata</i>        |
| Sharp Angle Shades         | <i>Conservula anodonta</i>  |
| Lost Sallow                | <i>Eupsilia devia</i>       |
| Little Virgin Tiger        | <i>Grammia virguncula</i>   |
| Louisiana Owlet            | <i>Macrochilo louisiana</i> |
| Bridgham's Brocade         | <i>Oligia bridghami</i>     |
| Chain Fern Borer           | <i>Papaipema stenocelis</i> |
| Cordgrass Borer            | <i>Photedes includens</i>   |

***Distribution & Abundance***

Butterflies and moths of open (non-forested) freshwater wetlands are primarily limited by the availability of larval food plants found in these habitats. In general, identified larval food plants have not been determined to be particularly rare, however open freshwater wetlands are sporadically distributed and small in size so that some food plants have small populations and reduced benefit for targeted species. Butterflies and moths are also vulnerable to pesticides used for control of mosquitoes (a threat that is particularly problematic for wetland species) and other widespread problem insects, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

***Threats and Actions by Species***

**drunk apamea moth (*Apamea inebriata*)**

Status: SRANK: SNR, GRANK: G3G4.

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

- Actions:
- Data collection and analysis; Research into alternative specific pesticides
  - 
  -

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

- Actions:
- Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**meadow fritillary (*Boloria bellona*)**

Status: STSTAT: C, SRANK: SNR, GRANK: G5. GRP: 2, PRIOR: 1,

- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

**silver-bordered fritillary (*Boloria selene*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**curved halter moth (*Capis curvata*)**

Status: SRANK: SNR, GRANK: G4. GRP: 5, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**sharp angle shades moth (*Conservula anodonta*)**

Status: SRANK: SNR, GRANK: G4. GRP: 10, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**black dash (*Euphyes conspicua*)**

Status: SRANK: S2?, GRANK: G4.

- Climate Change Vulnerability: Unknown

**lost sallow moth (*Eupsilia devia*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**little virgin tiger moth (*Grammia virguncula*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**bronze copper (*Lycaena hyllus*)**

Status: SRANK: SU, GRANK: G5. GRP: 18, PRIOR: 1,

- Climate Change Vulnerability: ( )

**twin-dotted macrochilo moth (*Macrochilo hypocritalis*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Habitat Loss due to development (see column Q and notes)**

**Threat 2 - Dams and water management/use; Habitat loss due to water withdrawals(see column Q and notes)**

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**Louisiana owlet moth (*Macrochilo louisiana*)**

Status: SRANK: SNR, GRANK: G4. GRP: 24, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

- Data collection and analysis; Research into alternative specific pesticides
- 
- 

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

- Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**Bridgham's brocade (*Oligia bridghami*)**

Status: SRANK: SU, GRANK: G4.  
- Climate Change Vulnerability: Unknown

**chain fern borer moth (*Papaipema stenocelis*)**

Status: SRANK: SNR, GRANK: G4.  
- Climate Change Vulnerability: Unknown

**included cordgrass borer moth (*Photedes includens*)**

Status: SRANK: SNR, GRANK: G4.  
- Climate Change Vulnerability: Unknown

**Acadian hairstreak (*Satyrrium acadicum*)**

Status: STSTAT: C, SRANK: S2S3, GRANK: G5. GRP: 22, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

**Lepidoptera of Ruderal Grasslands/Shrublands**

**INSECTA**



| <u>Common Name</u>    | <u>Scientific Name</u>        |
|-----------------------|-------------------------------|
| <u>Butterflies</u>    |                               |
| Dusted Skipper        | <i>Atrytonopsis hianna</i>    |
| Olive Hairstreak      | <i>Callophrys gryneus</i>     |
| Cobweb Skipper        | <i>Hesperia metea</i>         |
| Aphrodite Fritillary  | <i>Speyeria aphrodite</i>     |
| <u>Moths</u>          |                               |
| Triton Daggermoth     | <i>Acrionicta tritona</i>     |
| Chokeberry Underwing  | <i>Catocala crataegi</i>      |
| Pink Streak           | <i>Dargida rubripennis</i>    |
| Spotted Datana        | <i>Datana perspicua</i>       |
| Polished Dart         | <i>Euxoa perpolita</i>        |
| Scarlet-winged Lichen | <i>Hypoprepia miniata</i>     |
| Pink-border Yellow    | <i>Phytometra rhodanialis</i> |
| Four-spotted Speranza | <i>Speranza coortaria</i>     |

***Distribution & Abundance***

Butterflies and moths of ruderal grasslands and shrublands are primarily limited by the availability of larval food plants found in these habitats. In general, identified larval food plants in these habitats have not been determined to be particularly rare; however, there have been reductions in the amount of these habitats in recent years. More importantly, butterflies and moths are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insects, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

***Threats and Actions by Species***

**triton daggermoth (*Acrionicta tritona*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

Actions: • Data collection and analysis; Research into alternative specific pesticides

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

Actions: • Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**dusted skipper (*Atrytonopsis hianna*)**

Status: STSTAT: C, SRANK: S3, GRANK: G4G5. GRP: 1, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**olive hairstreak (*Callophrys gryneus*)**

Status: SRANK: S3, GRANK: G5. GRP: 4, PRIOR: 1,

- Climate Change Vulnerability: Unknown

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**chokeberry underwing (*Catocala crataegi*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**pink streak moth (*Dargida rubripennis*)**

Status: SRANK: SNR, GRANK: G3G4. GRP: 16, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**spotted datana (*Datana perspicua*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**polished dart moth (*Euxoa perpolita*)**

Status: SRANK: SNR, GRANK: GNR. GRP: 30, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**cobweb skipper (*Hesperia metea*)**

Status: SRANK: S4, GRANK: G4.

- Climate Change Vulnerability: Unknown

**scarlet-winged lichen moth (*Hypoprepia miniata*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**pink-border yellow (*Phytometra rhodarialis*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**four-spotted speranza moth (*Speranza coortaria*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**aphrodite fritillary (*Speyeria aphrodite*)**

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*Status: SRANK: S4, GRANK: G5.*

*- Climate Change Vulnerability: Unknown*

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**Moths of Maritime Grasslands/Shrublands**

**INSECTA**

|  |  | <u>Common Name</u>   | <u>Scientific Name</u>              |
|--|--|----------------------|-------------------------------------|
|  |  | Benjamin's abagrotis | <i>Abagrotis nefascia benjamini</i> |
|  |  | Bay Underwing        | <i>Catocala badia</i>               |
|  |  | Unexpected Cynia     | <i>Cynia inopinatus</i>             |
|  |  | Fringed Dart         | <i>Eucrotopcnemis fimbriaris</i>    |
|  |  | Violet Dart          | <i>Euxoa violaris</i>               |
|  |  | Dune Noctuid Moth    | <i>Sympistis riparia</i>            |

***Distribution & Abundance***

Moths associated with maritime grassland and shrubland habitats are limited by the occurrence of larval food plants that are primarily found in these habitats. In particular, bayberry and butterfly weed have been identified as the primary food plants for two SGCN moths; the food plants for additional species that occur in open maritime habitats have not been identified. The distribution of maritime grasslands and shrublands is relatively localized on the Rhode Island shore where residential, commercial, and other development has fragmented and reduced these habitats. Butterflies and moths are also vulnerable to pesticides used for widespread control of mosquitoes and other widespread problem insects, as well as homeowner use for control of aggravating insects.

***Threats and Actions by Species***

**Benjamin's abagrotis (*Abagrotis nefascia benjamini*)**

Status: STSTAT: C, SRANK: S1S2, GRANK: G4T3. PELAG: FORM, GRP: 1, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Habitat Loss due to development (see column Q and notes)**

Actions:

**Threat 2 - Dams and water management/use; Habitat loss due to water withdrawals(see column Q and notes)**

Actions:

**bay underwing (*Catocala badia*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**unexpected cynia (*Cynia inopinatus*)**

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Status: SRANK: SNR, GRANK: G4. GRP: 12, PRIOR: 1,

- Climate Change Vulnerability: Unknown

- Resource and habitat protection

**Threat 2 - Natural system modifications; Succession**

**fringed dart (*Eucoptocnemis fimbriaris*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**Threat 2 - Dams and water management/use; Habitat loss due to water withdrawals(see column Q and notes)**

**violet dart moth (*Euxoa violaris*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**dune noctuid moth (*Sympistis riparia*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**Threat 1 - Lack of information; Lack of info**

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**Moths of Pitch Pine Woodlands/Barrens**

**INSECTA**



| <u>Common Name</u>        | <u>Scientific Name</u>             |
|---------------------------|------------------------------------|
| Spotted Dartmoth          | <i>Agrotis stigmata</i>            |
| Short-lined Chocolate     | <i>Argyrostrotis anilis</i>        |
| Underwing Moth            | <i>Catocala</i> sp. n. <i>jair</i> |
| Barrens Chaetagnaea       | <i>Chaetagnaea tremula</i>         |
| Contracted Datana         | <i>Datana contracta</i>            |
| Pink Star Moth            | <i>Derrima stellata</i>            |
| Scrub Euchlaena Moth      | <i>Euchlaena madusaria</i>         |
| Eastern Buck Moth         | <i>Hemileuca maia</i>              |
| Yellow-spotted Graylet    | <i>Hyperstrotia flaviguttata</i>   |
| A Dart Moth               | <i>Leucania extincta</i>           |
| Thaxter's Pinon           | <i>Lithophane thaxteri</i>         |
| German Cousin             | <i>Sideridis congermana</i>        |
| Marooning                 | <i>Sideridis maryx</i>             |
| Blueberry Sallow          | <i>Sympistis dentata</i>           |
| Joyful Holomelina         | <i>Virbia laeta</i>                |
| Barrens Xylotype          | <i>Xylotype capex</i>              |
| Black-eyed Zale           | <i>Zale curema</i>                 |
| Pine Barrens Zale         | <i>Zale lunifera</i>               |
| Gray Spring Zale          | <i>Zale submediana</i>             |
| Pine Barrens Zanclognatha | <i>Zanclognatha martha</i>         |

***Distribution & Abundance***

Pitch pine woodlands and barrens are important habitats for a unique suite of rare moths in southern New England. The importance of these habitats results from unique soil conditions and temperature regimes, as well as the structure, species composition, and phenology of the plant community. Many species of moths characteristic of pitch pine barrens utilize scrub oak as a larval food plant. This shrub favors the dry conditions and periodic fire that governs these habitats. Butterflies and moths are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insects, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

***Threats and Actions by Species***

**spotted dart moth (*Agrotis stigmata*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**Threat 1 - Agriculture and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

Actions: • Data collection and analysis; Research into alternative specific pesticides

**Threat 2 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

Actions: • Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**short-lined chocolate (*Argyrostrotis anilis*)**

Status: SRANK: SNR, GRANK: G5. GRP: 4, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**underwing moth (*Catocala* n. sp.)**

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Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

**barrens chaetagnalea (*Chaetagnalea tremula*)**

Status: SRANK: S4, GRANK: G5. GRP: 9, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**contracted datana (*Datana contracta*)**

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**pink star moth (*Derrima stellata*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**scrub euchaena moth (*Euchaena madusaria*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**Eastern buck moth (*Hemileuca maia*)**

Status: SRANK: SNR, GRANK: G5. GRP: 18, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**noctuid moth (*Hyperstrotia flaviguttata*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**dart moth (*Leucania extincta*)**

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**German cousin (*Sideridis congermana*)**

Status: SRANK: SNR, GRANK: GNR.

- Climate Change Vulnerability: Unknown

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**marooning moth (*Sideridis maryx*)**

Status: SRANK: SNR, GRANK: G4. GRP: 35, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**blueberry sallow (*Sympistis dentata*)**

Status: STSTAT: C, SRANK: S1S2, GRANK: G4. GRP: 2, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**joyful holomelina moth (*Virbia laeta*)**

Status: SRANK: SU, GRANK: G4.  
- Climate Change Vulnerability: Unknown

**barrens xylotype (*Xylotype capax*)**

Status: SRANK: S2S4, GRANK: G4. GRP: 37, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**black-eyed zale (*Zale curema*)**

Status: SRANK: S?, GRANK: G3G4. GRP: 38, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**pine barrens zale (*Zale lunifera*)**

Status: STSTAT: C, SRANK: S1, GRANK: G3Q. GRP: 39, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**gray spring zale (*Zale submediana*)**

Status: STSTAT: C, SRANK: S2, GRANK: G4. GRP: 40, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**pine barrens zanclognatha (*Zanclognatha martha*)**

Status: SRANK: S?, GRANK: G4. GRP: 41, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**Species of Greatest Conservation Need**

**Butterflies of Pitch Pine Woodlands/Barrens**

**INSECTA**



| <u>Common Name</u>  | <u>Scientific Name</u>    |
|---------------------|---------------------------|
| Frosted Elfin       | <i>Callophrys irus</i>    |
| Hoary Elfin         | <i>Callophrys polios</i>  |
| Sleepy Duskywing    | <i>Erynnis brizo</i>      |
| Persius Duskywing   | <i>Erynnis persius</i>    |
| Edward's Hairstreak | <i>Satyrium edwardsii</i> |

***Distribution & Abundance***

The frosted elfin ranges widely throughout the eastern U.S. from western Maine to Florida and west to central Wisconsin and eastern Texas, but it is extremely local and usually scarce throughout this area. In Rhode Island, it is limited to only 2-3 sites where the largest populations of wild lupine or wild indigo are found. The Xerces Society has included the frosted elfin on its Red List of Pollinator Insects; it is listed as an Endangered Species in Delaware, Maryland, and New Hampshire, as a Threatened Species in Connecticut, New Jersey, and New York, and a Species of Concern in Massachusetts and Rhode Island. The frosted elfin ranges widely throughout the eastern U.S. from western Maine to Florida and west to central Wisconsin and eastern Texas, but it is extremely local and usually scarce throughout this area. In Rhode Island, it is limited to only 2-3 sites where the largest populations of wild lupine or wild indigo are found. The Xerces Society has included the frosted elfin on its Red List of Pollinator Insects; it is listed as an Endangered Species in Delaware, Maryland, and New Hampshire, as a Threatened Species in Connecticut, New Jersey, and New York, and a Species of Concern in Massachusetts and Rhode Island. Edward's hairstreak and sleepy duskywing (scrub oak feeders), and hoary elfin (bearberry feeder) are generally more widespread due to the greater availability of their larval food plants; however, the decline of pitch pine barrens in Rhode Island has relegated these species to only a few of the larger remaining patches of this habitat type. The primary threat to this suite of butterflies is loss of pitch pine habitat of a condition that supports the larval food plants cited above. As such, actions described for improving the condition of pitch pine barrens in Rhode Island (see Pitch Pine Woodland/Barren profile) would also benefit these butterflies. In addition, increasing the supply of larval food plants, especially wild lupine and wild indigo, may be accomplished through augmentation of existing populations, or establishment of new populations in appropriate habitat. Butterflies and moths are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insects, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

***Threats and Actions by Species***

**frosted elfin (*Callophrys (Decid.) irus (Baptisia type)* AND *Callophrys (Decid.) irus (Lupine type)*)**

Status: STSTAT: C, SRANK: S1, GRANK: G3. GRP: 7, PRIOR: 1, Xerces: imperiled,  
 - Climate Change Vulnerability: Unknown

**Threat 1 - Other ecosystem modifications; Reduction in larval food plants, especially wild lupine and wild indigo**

Actions: • Species recovery; Enhancing/augmenting populations of larval food plants

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- *Species reintroduction; Establish new populations of larval food plants*

**Threat 2 - Agricultural and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

- Actions:
- *Data collection and analysis; Research into alternative specific pesticides*
  - *Planning*

**Threat 3 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

- Actions:
- *Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms*

**hoary elfin (*Callophrys polios*)**

Status: STSTAT: C, SRANK: S1, GRANK: G5. GRP: 9, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**sleepy duskywing (*Erynnis brizo*)**

Status: STSTAT: C, SRANK: S2, GRANK: G5. GRP: 11, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**persius duskywing (*Erynnis persius*)**

Status: STSTAT: SH, OTSTAT: MA-E (KD), SRANK: SH, GRANK: G5. GRP: 13, PRIOR: 1, Xerces: imperiled,  
- Climate Change Vulnerability: Unknown

**Edwards' hairstreak (*Satyrrium edwardsii*)**

Status: SRANK: S5, GRANK: G4. GRP: 24, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

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**Odonates of Springs, Graminoid Fen, Wetlands,  
 Coastal Plain Quagmire and Pondshore, and  
 Eutrophic and Oligotrophic Ponds**

**INSECTA**

| <u>Common Name</u>       | <u>Scientific Name</u>          |
|--------------------------|---------------------------------|
| comet darner             | <i>Anax longipes</i>            |
| arrowhead spiketail      | <i>Cordulegaster obliqua</i>    |
| scarlet bluet            | <i>Enallagma pictum</i>         |
| pine barrens bluet       | <i>Enallagma recurvatum</i>     |
| taper-tailed darner      | <i>Gomphaeschna antilope</i>    |
| lyre-tipped spreadwing   | <i>Lestes unguiculatus</i>      |
| crimson-ringed whiteface | <i>Leucorrhinia glacialis</i>   |
| southern sprite          | <i>Nehalennia integricollis</i> |
| umber shadowdragon       | <i>Neurocordulia obsoleta</i>   |
| common sanddragon        | <i>Progomphus obscurus</i>      |
| ringed boghaunter        | <i>Williamsonia lintneri</i>    |

### ***Distribution & Abundance***

### ***Threats and Actions by Species***

#### **comet darner (*Anax longipes*)**

Distribution & Abundance: *Anax longipes* is considered limited and uncommon in Rhode Island, but as a breeder it should be considered restricted and rare. It wanders far from breeding habitats and could be observed almost anywhere in the state, but has been confirmed reproducing at only a handful of locations. It occurs in low numbers everywhere it has been recorded, with rarely more than one or two individuals reported.

*Status: IUCN Rank: LC, OTSTAT: MA-C (KD), SRANK: S2, GRANK: G5. GRP: 2, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

#### **Threat 1 - Residential and commercial development; Also industrial development**

*Actions:* • *Land/water protection*

#### **Threat 2 - Dams and water management/use; Abstraction of water for residential and commercial use**

*Actions:* • *Land/water management*

#### **Threat 3 - Invasive and other problematic species and genes; Phragmites, fish**

*Actions:* • *Invasive/problematic species control*  
 • *monitor for presence of Phragmites*  
 • *Education and awareness*  
 • *public education about impacts of invasive species*

#### **Threat 4 - Climate change and severe weather; Impact of drought and flood on pond levels**

*Actions:*

#### **arrowhead spiketail (*Cordulegaster obliqua*)**

Distribution & Abundance: The least common of the three *Cordulegaster* species here, with only 10 populations

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known in the state. These are widely distributed in four counties. Streams that support all three spiketails should be priorities for conservation.

*Status: IUCN Rank: LC, STSTAT: C, SRANK: SNR, GRANK: G4. CODES: RES, GRP: 5, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

*Resource and habitat protection*

- *priority: protect streams which support all three Cordulegaster species*

**Threat 2 - Logging and wood harvesting; Clearing of forests for development**

*Resource and habitat protection*

- *maintain forest cover to protect stream quality*

**Threat 3 - Pollution; Species occurs in high quality streams**

*Land/water protection*

*maintain water quality through protection of land in watershed*

**Threat 4 - Droughts; Extended periods of low stream flow**

**scarlet bluet (*Enallagma pictum*)**

Distribution & Abundance: Endemic to the northeastern United States; in Rhode Island, this species is found only in communities west of Narragansett Bay, where it ranges from southern coastal townships to the northwest corner. It is limited in distribution, known from only 21 sites in 12 townships, and may be present in large numbers at some ponds. Important to concentrate conservation efforts on ponds that support this species and the Pine Barrens Bluet.

*Status: IUCN Rank: NT, STSTAT: C, OTSTAT: MA/NY-T (KD), SRANK: S2, GRANK: G3. GRP: 1, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

**Threat 1 - Residential and commercial development**

*Land/water protection*

- *Resource and habitat protection*
- *Land/water management*

**Threat 2 - Invasive non-native/alien species; Introduction or stocking of fish; Phragmites and invasive aquatic plants**

*Invasive/problematic species control*

*monitor habitats for presence of invasive plants and animals*

**Threat 3 - Pollution**

*Resource and habitat protection*

*protect ponds and surrounding land*

**Threat 4 - Recreational activities; ATV impacts on exposed shorelines of ponds**

- *Site/area management*
- *prevent vehicular access*
- *Education and awareness*
- *signage*

**pine barrens bluet (*Enallagma recurvatum*)**

Distribution & Abundance: Endemic to the northeastern United States; in Rhode Island *E. recurvatum* occurs west of Narragansett Bay, with a spotty distribution from Burrillville to South Kingstown. It is known from 24 sites in 12 townships, and may be present in large numbers at some ponds. Important to concentrate conservation efforts on ponds that support this species and the Scarlet Bluet.

*Status: IUCN Rank: NT, STSTAT: C, OTSTAT: MA/NY-T; CT-C (KD), SRANK: S2, GRANK: G3. GRP: 2, PRIOR: 1,*  
*- Climate Change Vulnerability: Unknown*

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**taper-tailed darner (*Gomphaeschna antilope*)**

Distribution & Abundance: *G. antilope* is a southern species, restricted in distribution and rare here, occurring at a few locations each year. Although more study is needed to determine its breeding status, teneral individuals have been observed, indicative of a nearby breeding site.

Status: SRANK: S1, GRANK: G4. GRP: 6, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Lack of information; Threats unknown: the status of this species in RI is poorly understood, may not be resident here; needs more study**

*Data collection and analysis*

**lyre-tipped spreadwing (*Lestes unguiculatus*)**

Distribution & Abundance: This damselfly is restricted in distribution and rare in Rhode Island. It is known from only four ponds in three townships, all of them at or near the coast.

Status: SRANK: S1, GRANK: G5. CODES: RES, GRP: 5, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Also industrial development; causes wetland loss, degradation**

*Land/water protection*

- *Resource and habitat protection*

**Threat 2 - Droughts; Extended drought could lead to drawdown of small wetlands**

*Actions:*

**crimson-ringed whiteface (*Leucorrhinia glacialis*)**

Distribution & Abundance: As the species name implies, this is a northern boreal species, restricted and very rare in Rhode Island. It is known from only two wetlands in northwestern Providence County, both on protected land. However, beavers have moved into one of these wetlands and may significantly alter the habitat. The effect of beavers on the species needs more study and the population at the site with beavers should be monitored.

Status: IUCN Rank: LC, OTSTAT: CT-T (KD), SRANK: S1, GRANK: G5. GRP: 10, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Problematic native species; Beaver in only habitat supporting this species; wetland inundated**

*Species management*

- *remove beaver dam?*

*Other*

- *monitor impacts of beaver on hydrology, aquatic vegetation*
- *Other*
- *check status of *L. glacialis* population*

**Threat 2 - Invasive non-native/alien species; Phragmites: present in only wetland supporting this species**

- *Species management*
- *contain/remove Phragmites*

**Threat 3 - Climate change and severe weather; Northern species may be displaced by warming temperatures and/or flooding, drawdown due to drought**

*Actions:*

**southern sprite (*Nehalennia integricollis*)**

Distribution & Abundance: This southern species reaches its northern range limit in Rhode Island, where it is very rare, present at just one pond. There are no other New England populations known, and it is also very rare

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in New York where the nearest populations occur. This is the rarest damselfly in Rhode Island and should be considered extremely vulnerable.

Status: OTSTAT: NY-C (KD), SRANK: S1, GRANK: G5. CODES: RES, GRP: 6, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Causes degradation of pond shores and water quality**

*Land/water protection*  
*protect land around pond*  
*Resource and habitat protection*  
*protect coastal plain pond shore vegetation, processes*

**Threat 2 - Dams and water management/use; Extraction of groundwater for residential/commercial use**

*Resource and habitat protection*  
*protect land surrounding pond to minimize impact of extraction of water*

**Threat 3 - Invasive and other problematic species and genes; Phragmites**

- *Invasive/problematic species control*
- *also monitor for presence of Phragmites*

**Threat 4 - Droughts; Extended droughts impact pond levels and vegetation**

*Actions:*

**umber shadowdragon (itis) (*Neurocordulia obsoleta*)**

Distribution & Abundance: Restricted and very rare, known only from two lakes west of Narragansett Bay, but populations appear robust at both of these sites. Adults are difficult to survey because reproductive flights are brief and take place for 20-25 minutes at dusk, when adults can be seen whipping about in the waning light, flying within an inch or two of the water's surface.

Status: IUCN Rank: LC, SRANK: S1, GRANK: G5.  
- Climate Change Vulnerability: Unknown

**Threat 1 - Dams and water management/use; Municipal water management may be a threat; species occurs only in one system**

*Land/water management*

**Threat 2 - Lack of information; Threats unknown, needs more inventory**

**common sanddragon (*Progomphus obscurus*)**

Distribution & Abundance: Restricted in distribution and rare in Rhode Island, with only nine breeding sites known, all in the southern part of the state and west of Narragansett Bay.

Status: SRANK: SNR, GRANK: G5. GRP: 13, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development;**

*Land/water protection*

**Threat 2 - Dams and water management/use; Abstraction of water for residential/commercial use**

- *Land/water management*

**Threat 3 - Pollution**

*Actions:* • *Land/water management*

**ringed boghaunter (*Williamsonia lintneri*)**

Distribution & Abundance: Limited and uncommon, recorded from 30 Rhode Island wetlands in 11 townships, all but one west of Narragansett Bay. A population in East Providence is considered extirpated, lost to urbanization. Most populations are very small, with fewer than 30 individuals present, and many are

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ephemeral, winking on and off in the landscape. Many small and ephemeral populations are vulnerable to extirpation due to their size, dynamics, and isolation. Others, including the largest population of this species known range-wide, are vulnerable to large-scale multi-use developments that extend to or will extend to 100 feet from the breeding site. All populations should be monitored for presence/absence.

*Status: IUCN Rank: VU, STSTAT: C, OTSTAT: CT-E; MA/ME-T (KD), SRANK: S2, GRANK: G3. GRP: 17, PRIOR: 1,  
- Climate Change Vulnerability: Unknown*

**Threat 1 - Residential and commercial development; Industrial development also a threat, large mixed use developments threatening habitat**

*Resource and habitat protection*

- *protect wetland and surrounding forested upland*

**Threat 2 - Logging and wood harvesting; Adult dragonflies inhabit forest; forest cover maintains quality of wetlands, including water temperature**

*Site/area management*

- *maintain forest cover*

**Threat 3 - Problematic native species; Flooding of wetland and alteration of hydrologic regime due to presence of beaver**

*Invasive/problematic species control*

- *remove beaver dam*
- *Other*
- *monitor for presence of beaver/beaver activity*

**Threat 4 - Invasive non-native/alien species; Introduction of fish, invasive aquatic plants**

*Actions:* • *Invasive/problematic species control*

- *Other*
- *monitor for presence of fish and invasive aquatic plants*

**Threat 5 - run-off from development impacts water quality, water temperature, sphagnum sensitive to water pollution; Resource and habitat protection**

*Actions:* • *protecting large areas of upland will minimize/eliminate threat of pollution*

- *Policies and regulations*
- *increase regulatory buffer around wetlands that support *W. lintneri**

**Threat 6 - Other ecosystem modifications; Abstraction of water for domestic, commercial, industrial use**

*Actions:* • *Land/water protection*

- *protect land in watershed of wetland*

**Threat 7 - Other; Small populations vulnerable to collecting**

*Actions:* • *Education and awareness*

- *Legislation*
- *improve legal protection of endangered insects, regulate collecting*

**Threat 8 - Climate change and severe weather; Changes in hydrologic regime, increase in water temperature**

*Actions:*

- # INSECTA

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Status: IUCN Rank: DD, STSTAT: C, OTSTAT: MA-E (KD), SRANK: SU, GRANK: G3G4. GRP: 14, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Natural system modifications; Species occurs in small streams**

*Land/water management*

- *maintain stream flow/quality*

*Land/water protection*

- *conservation of land in small stream watersheds*

**Threat 2 - Lack of information; Additional threats may exist, but needs more study statewide**

**arrow clubtail (*Stylurus spiniceps*)**

Distribution & Abundance: Restricted and rare in Rhode Island, known only from two rivers in one watershed where it occupies at least four stations encompassing 11 miles of riffles and rapids.

Status: IUCN Rank: LC, SRANK: S1, GRANK: G5. GRP: 16, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution; Species shows some tolerance for water quality degradation, but is found in compromised rivers below dams where water is oxygenated**

*Compliance and enforcement*

*improve water quality to the extent possible in degraded systems*

**Threat 2 - Dams and water management/use; Dam releases can cause high mortality in emerging dragonflies**

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**Odonates of the Upper Perennial River**

**INSECTA**

| <u>Common Name</u>      | <u>Scientific Name</u>          |
|-------------------------|---------------------------------|
| delta-spotted spiketail | <i>Cordulegaster diastatops</i> |
| twin-spotted spiketail  | <i>Cordulegaster maculata</i>   |
| spine-crowned clubtail  | <i>Gomphus abbreviatus</i>      |
| mustached clubtail      | <i>Gomphus adelphus</i>         |
| American rubyspot       | <i>Hetaerina americana</i>      |
| southern pygmy clubtail | <i>Lanthus vernalis</i>         |
| brook snaketail         | <i>Ophiogomphus aspersus</i>    |
| Maine snaketail         | <i>Ophiogomphus mainensis</i>   |
| zebra clubtail          | <i>Stylurus scudderi</i>        |

***Distribution & Abundance***

***Threats and Actions by Species***

**delta-spotted spiketail (*Cordulegaster diastatops*)**

Distribution & Abundance: Limited and uncommon in Rhode Island, most widespread west of Narragansett Bay particularly in the headwater streams of the Pawcatuck watershed where it may be locally common. It is not known from east of Narragansett Bay or the islands. A few streams support all three spiketails in Rhode Island and these should be priorities for conservation efforts.

Status: SRANK: SNR, GRANK: G5. GRP: 3, PRIOR: 1,  
 - Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Also industrial development**

Actions:

- priority: protect streams which support all three *Cordulegaster* species

**Threat 2 - Logging and wood harvesting; Clearing of forests for development**

- Actions:
- Resource and habitat protection
  - maintain forest cover to protect stream quality

**Threat 3 - Pollution; Species occurs in high quality streams**

- Actions:
- Land/water protection
  - maintain water quality through protection of land in watershed

**Threat 4 - Droughts; Extended periods of low stream flow**

Actions:

**twin-spotted spiketail (*Cordulegaster maculata*)**

Distribution & Abundance: This species is limited and uncommon, but is the most widespread of the three spiketails in Rhode Island. It is distributed spottily throughout the state but is rare east of Narragansett Bay and is absent from all islands. Streams that support all three spiketails should be priorities for conservation.

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Status: SRANK: SNR, GRANK: G5. GRP: 4, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**spine-crowned clubtail (*Gomphus abbreviatus*)**

Distribution & Abundance: Restricted and rare in Rhode Island, very sparsely distributed in two watersheds in northern and southern townships of Providence and Washington Counties.

Status: IUCN Rank: LC, OTSTAT: MA-C (KD), SRANK: S1, GRANK: G3G4. CODES: RES, GRP: 7, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution; Species has moderate sensitivity to pollution, but may occur on compromised rivers in rapids below dams**

- Land/water protection

**Threat 2 - Logging and wood harvesting; Forest removal affects water quality/temperature**

*retain forest cover in watershed of streams*

**Threat 3 - Dams and water management/use; Species requires stream/riverine conditions but may occur below dams in rapids**

*Land/water management*

*prevent impoundment of rivers*

**Threat 4 - Recreational activities; Fishing access, bank destabilization**

- Land/water management
- maintain river banks, minimize access points

**Threat 5 - Invasive and other problematic species and genes; Fish stocking**

- Actions:
- Species management
  - minimize stocking where species occurs

**Threat 6 - Droughts; Extended periods of low stream flow**

Actions:

**Threat 7 - Dams and water management/use; Dam releases can cause high mortality in emerging dragonflies**

- Actions:
- Land/water management

**mustached clubtail (*Gomphus adelphus*)**

Distribution & Abundance: Restricted and rare, found in six sites in the upper Blackstone and Pawcatuck watersheds.

Status: OTSTAT: CT-T (KD), SRANK: SNR, GRANK: G4. CODES: RES, GRP: 8, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution;**

**Threat 3 - Dams and water management/use; Species requires stream/riverine conditions**

**American rubyspot (*Hetaerina americana*)**

Distribution & Abundance: In Rhode Island *H. americana* is limited in distribution (16 of 39 townships), occurring at approximately 23 stations in nine rivers and streams, all west of Narragansett Bay. It is often associated with the fast flowing water below dams, where it may be locally common.

Status: OTSTAT: CT-T (KD), SRANK: SNR, GRANK: G5. CODES: RES, GRP: 4, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Residential and commercial development; Also industrial development**

- Resource and habitat protection

**Threat 2 - Dams and water management/use; Species requires lotic conditions**

*Site/area management*

**DRAFT Rhode Island Wildlife Action Plan Habitat Profiles**  
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*prevent impoundment of water*

**Threat 3 - Pollution; Stormwater, industrial pollutants**

*Policies and regulations*

- *Compliance and enforcement*

**southern pygmy clubtail (*Lanthus vernalis*)**

Distribution & Abundance: Found in only six streams in five townships west of Narragansett Bay. Despite an abundance of what appears to be suitable habitat in Rhode Island, this species is surprisingly restricted and rare here.

Status: SRANK: SNR, GRANK: G4. GRP: 9, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Droughts; Occurs in very small streams**

*Other*

- *study impact of naturally occurring drought on species*
- Land/water protection*
- *protect land in small stream watersheds*

**brook snaketail (*Ophiogomphus aspersus*)**

Distribution & Abundance: This species is restricted in distribution to the Pawcatuck watershed, but it occurs at numerous stations here and may be locally common in a few places.

Status: IUCN Rank: LC, STSTAT: ST, OTSTAT: MA-C (KD), SRANK: S1, GRANK: G3G4. GRP: 11, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution**

*Land/water protection*

**Threat 2 - Logging and wood harvesting; Forest removal affects water quality, temperature**

- Actions:
- *Resource and habitat protection*
  - *retain forest cover in watershed of streams*

**Threat 3 - Dams and water management/use; Species requires stream/riverine conditions**

- Actions:
- *Land/water management*
  - *prevent impoundment of streams*

**Threat 4 - Recreational activities; Fishing access, bank destabilization**

Actions:

**Threat 5 - Invasive and other problematic species and genes; Fish stocking**

Actions:

**Threat 6 - Droughts; Low stream flow**

Actions:

**Maine snaketail (*Ophiogomphus mainensis*)**

Distribution & Abundance: More widespread than the Brook Snaketail, *O. mainensis* occurs in headwater streams from Exeter to Burrillville and may be locally common in some places. Most populations occur in the clean streams of the upper Pawcatuck system.

Status: SRANK: SU, GRANK: G4. GRP: 12, PRIOR: 1,

- Climate Change Vulnerability: Unknown

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**zebra clubtail (*Stylurus scudderi*)**

Distribution & Abundance: Restricted and rare in Rhode Island, known from only two widely separated watersheds west of Narragansett Bay. The species is most common in the Pawcatuck system.

Status: STSTAT: ST, SRANK: S1, GRANK: G4. GRP: 15, PRIOR: 1,

- Climate Change Vulnerability: Unknown

**Threat 1 - Pollution; Species occurs in high quality streams**

- *protect streams and watershed*  
*Land/water management*  
*maintain forest cover in watershed of streams*
- *Land/water management*
- *maintain stream banks, reduce size of fishing access*
- *Species management*
- *limit stocking programs where species occurs*

**Threat 7 - Dams and water management/use; Dam releases can cause high mortality in emerging dragonflies**

Actions: • *Land/water management*

**DRAFT Rhode Island Wildlife Action Plan Habitat Profiles**  
**Species of Greatest Conservation Need**

**Pollinators - Bumble Bees**

**INSECTA**



| <u>Common Name</u>       | <u>Scientific Name</u>  |
|--------------------------|-------------------------|
| Rusty-patched Bumble Bee | <i>Bombus affinis</i>   |
| Yellow-banded Bumble Bee | <i>Bombus terricola</i> |

***Distribution & Abundance***

Evidence has been growing in recent years that populations of certain species of pollinating insects have been significantly declining in the United States. The best known example is colony collapse disorder in honey bees. Reduced pollinator populations can result in decreased pollination of plant species dependent on these insects for fertilization and reproduction. As a result, those plants corresponding to each pollinator could face population declines and increased threat of extinction. At least 20 species of bumble bees are known from Rhode Island. Bumble bees are unique among pollinators in their use of a process known as buzz pollination, a behavior in which bumblebees move their flight muscles rapidly so that their entire body vibrates to dislodge pollen from the anther of a flower. Some flowering plant species requiring buzz pollination for maximum pollination and fruit yields include tomatoes, blueberries, cranberries, and eggplant. Some populations of bumble bees have declined in recent years due to several factors, including habitat degradation, habitat fragmentation, and loss of nesting or foraging sites. In addition, populations of several bumblebees have been severely impacted by a fungal infection introduced from Europe through the commercial bumblebee industry. Pollinators are also highly vulnerable to pesticide use, including broad-based sprayings for mosquito control, or backyard application of broad-spectrum insecticides. Two species of bumble bees are recognized as SGCN in Rhode Island. The rusty-patched bumble bee (*Bombus affinis*) was commonly distributed throughout the east and upper Midwest of the United States, but according to the Xerces Society has declined from at least 87% of its historic range. With most of this decline occurring in recent years, the Xerces Society has petitioned the USFWS for protection of rusty-patched bumble bee under provisions of the Endangered Species Act. Listing would afford protection by addressing site-specific threats and supporting habitat enhancement. The yellow-banded bumble bee (*Bombus terricola*), once commonly distributed throughout the east, upper Midwest, and southern Canada, has also suffered steep declines. According to the Xerces Society this bee has not been seen in most parts of its range since 1999, except for isolated sites in Wisconsin and Pennsylvania. Commercial bumble bee rearing, an unregulated enterprise, is considered the primary threat to both rusty-patched and yellow-banded bumble bees. It is suspected that commercially-reared bumble bees of several species were infected with a virulent strain of *Nosema* fungus introduced in shipments of European bees and released into wild populations that had no prior resistance to this pathogen. As no populations of these species are currently known in Rhode Island, a primary research need is location of both rusty-patched and yellow-banded bumble bee, an effort that would be aided by a larger scale project to inventory all bumble bees in the state. Bumble bees, and all pollinators, are also vulnerable to pesticides used for control of mosquitoes and other widespread problem insects, as well as homeowner use of over-the-counter pesticides for control of aggravating insects.

***Threats and Actions by Species***

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**rusty-patched bumble bee (*Bombus affinis*)**

Status: SRANK: SNR, GRANK: G1. Xerces: imperiled,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Lack of information; Population data needed (unknown pathogen)**

Actions: • Data collection and analysis; Conduct inventory and determine location of populations

**Threat 2 - Agricultural and forestry effluents; Use of non-specific pesticides for control of invasive and other problematic insects**

Actions: • Data collection and analysis; Research into alternative specific pesticides

**Threat 3 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

Actions: • Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**Threat 4 - Invasive non-native/alien species; Fungus introduced in commercially-reared bumble bees**

Actions: • Policies and regulations

**yellowbanded bumblebee (*Bombus terricola*)**

Status: SRANK: SNR, GRANK: G2G4. Xerces: imperiled,  
- Climate Change Vulnerability: Unknown

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**Pollinators - Monarch Butterfly**

**INSECTA**



***Distribution & Abundance***

***Threats and Actions by Species***

**monarch butterfly (*Danaus plexippus*)**

Status: SRANK: SNR, GRANK: G4. GRP: 13, PRIOR: 1,  
- Climate Change Vulnerability: Unknown

**Threat 1 - Other ecosystem modifications; Decline in populations of milkweed**

- Actions:
- *Habitat and natural process restoration*
  - *Species recovery; Restoration of milkweed populations, including propagation of milkweed using locally-sourced seed*
  - *Training; Workshops and other educational forums in creating and enhancing pollinator habitats*

**Threat 2 - Agricultural and forestry effluents; Use of non-specific pesticides for control of nuisance insects**

- Actions:
- *Data collection and analysis; Research into alternative specific pesticides*

**Threat 3 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

- Actions:
- *Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms*

**Threat 4 - Agricultural and forestry effluents; Broad-based use of herbicides, especially RoundUp**

- Actions:
- *Policies and regulations; Restricting the use of herbicides in situations that can impact populations of plants important to pollinators*
  - *Awareness and communications; Public education concerning the effects of herbicides on dependent pollinator organisms*

*DRAFT Rhode Island Wildlife Action Plan Habitat Profiles*  
**Species of Greatest Conservation Need**

**Pollinators - Silkworm and Sphinx Moths**

**INSECTA**

|  | <u>Common Name</u>  | <u>Scientific Name</u>       |
|--|---------------------|------------------------------|
|  | Tulip Tree Silkworm | <i>Callosamia angulifera</i> |
|  | Promethia Silkmoth  | <i>Callosamia promethea</i>  |
|  | Waved Sphinx        | <i>Ceratomia undulosa</i>    |
|  | Hydrangea Sphinx    | <i>Darapsa versicolor</i>    |
|  | Achemon Sphinx      | <i>Eumorpha achemon</i>      |
|  | Cecropia Moth       | <i>Hyalophora cecropia</i>   |
|  | Big Poplar Sphinx   | <i>Pachysphinx modesta</i>   |
|  | Hermit Sphinx       | <i>Phinx eremitus</i>        |
|  | Wild Cherry Sphinx  | <i>Sphinx drupiferarum</i>   |
|  | Laurel Sphinx       | <i>Sphinx kalmiae</i>        |

*Rick Enser*

***Distribution & Abundance***

***Threats and Actions by Species***

**tulip tree silkworm (*Callosamia angulifera*)**

Distribution & Abundance: See INV110 *Eumorpha achemon*

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**Threat 1 - Invasive non-native/alien species; Introduction of *Compsilura*; spread of this parasite to additional areas**

- Actions:
- Data collection and analysis; Conduct research on how to control spread of this parasite
  - Policies and regulations; Formulate policies concerning the introduction of *Compsilura* for control of pest species of moths

**Threat 2 - Agricultural and forestry effluents; Use of non-specific pesticides for control of nuisance insects**

- Actions:
- Data collection and analysis; Research into alternative specific pesticides

**Threat 3 - Housing and urban areas; Use of non-specific pesticides for control of nuisance insects**

- Actions:
- Awareness and communications; Public education concerning the effects of non-specific pesticides on non-target organisms

**promethia silkmoth (*Callosamia promethea*)**

Distribution & Abundance: See INV110 *Eumorpha achemon*

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**waved sphinx (*Ceratomia undulosa*)**

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Distribution & Abundance: See INV110 Eumorpha achemon

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**hydrangea sphinx (*Darapsa versicolor*)**

Distribution & Abundance: See INV110 Eumorpha achemon

Status:

- Climate Change Vulnerability: Unknown

**achemon sphinx (*Eumorpha achemon*)**

Status: SRANK: SNR, GRANK: G4G5.

- Climate Change Vulnerability: Unknown

**cecropia moth (*Hyalophora cecropia*)**

Distribution & Abundance: See INV110 Eumorpha achemon

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**big poplar sphinx (*Pachysphinx modesta*)**

Distribution & Abundance: See INV110 Eumorpha achemon

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

**wild cherry sphinx (*Sphinx drupiferarum*)**

Distribution & Abundance: See INV110 Eumorpha achemon

Status: SRANK: SNR, GRANK: G4.

- Climate Change Vulnerability: Unknown

**hermit sphinx (*Sphinx eremitus*)**

Distribution & Abundance: See INV110 Eumorpha achemon

Status: SRANK: SNR, GRANK: G4G5.

- Climate Change Vulnerability: Unknown

**laurel sphinx (*Sphinx kalmiae*)**

Distribution & Abundance: See INV110 Eumorpha achemon

Status: SRANK: SNR, GRANK: G5.

- Climate Change Vulnerability: Unknown

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## Robber Flies

## INSECTA



| <u>Common Name</u>  | <u>Scientific Name</u>       |
|---------------------|------------------------------|
| bee-like robber fly | <i>Laphria champlainii</i>   |
| robber fly          | <i>Pogonosoma dorsatum</i>   |
| robber fly          | <i>Stichopogon argenteus</i> |

### ***Distribution & Abundance***

Robber flies (Order: Diptera; Family: Asilidae) are powerfully built, bristly flies that are named for their aggressive predatory habits, feeding mainly or exclusively on other insects, waiting in ambush to catch their prey in flight. A robber fly attacks its prey by stabbing it with its short, strong proboscis injecting the victim with saliva containing neurotoxic and proteolytic enzymes which very rapidly paralyze the victim and soon digest the insides; the fly then sucks the liquefied material through the proboscis. Robber flies generally occur in habitats that are open, sunny and dry, favoring open or scattered vegetation, and some species frequent bare ground. This group have insects has been inventoried in Rhode Island during the past several years with three species identified as uncommon and worthy of conservation attention. *Laphria champlainii* typically occurs in pitch pine/scrub oak barrens and has been found at four sites in Rhode Island in Kent and Washington Counties. *Pogonosoma dorsatum* also occurs in pitch pine dominated communities, but has only been found at one site in Rhode Island in the town of Charlestown. *Stichopogon argenteus* has a spotty distribution in North America in sandy habitats. In Rhode Island it has only been found on coastal beaches and dunes, primarily in New port County and in the town of Narragansett Washington County

### ***Threats and Actions by Species***

#### **bee-like robber fly (*Laphria champlainii*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

#### **robber fly (*Pogonosoma dorsatum*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

#### **robber fly (*Stichopogon argenteus*)**

*Status:*

- *Climate Change Vulnerability: Unknown*

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**Stoneflies, Mayflies, and True Flies**

**INSECTA**

| <u>Common Name</u>         | <u>Scientific Name</u>       |
|----------------------------|------------------------------|
| watersnipe flies           | <i>Atherix spp.</i>          |
| giant stonefly             | <i>Attaneuria ruralis</i>    |
| yellow stonefly            | <i>Eccopectera xanthenes</i> |
| mayflies (little maryatts) | <i>Epeorus sp.</i>           |
| sallflies                  | <i>Haploperla sp.</i>        |
| small minnow mayflies      | <i>Heterocloeon sp.</i>      |
| golden stoneflies          | <i>Paragnetina sp.</i>       |

***Distribution & Abundance***

***Threats and Actions by Species***

**watersnipe flies (*Atherix spp.*)**

*Status:*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*

**giant stonefly (*Attaneuria ruralis*)**

*Status: SRANK: SNR, GRANK: G4.*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*

**yellow stonefly (*Eccopectera xanthenes*)**

*Status: SRANK: SNR, GRANK: G5.*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*

**mayflies (little maryatts) (*Epeorus sp.*)**

*Status:*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*

**sallflies (*Haploperla sp.*)**

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*Status:*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*

**small minnow mayflies (*Heterocloeon sp.*)**

*Status:*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*

**golden stoneflies (*Paragnetina sp.*)**

*Status:*

- *Climate Change Vulnerability: Unknown (susceptible to decreasing water quality, and quantity from climate change)*